# CALIBRATION AND SERVICING HANDBOOK

## 1061
## 1061A

datron
INSTRUMENTS

digital voltmeters

# CALIBRATION AND SERVICING HANDBOOK

for

# THE DATRON AUTOCAL 1061 and 1061A DIGITAL VOLTMETERS

(for operating procedures
refer to the User's Handbook)

850045 Issue 9 (SEPT. 1988)

For any assistance contact your nearest Datron Sales and Service center.
Addresses can be found at the back of this handbook.

Due to our policy of continuously updating our products, this handbook may contain minor differences in specification, components and circuit design to the instrument actually supplied. Amendment sheets precisely matched to your instrument serial number are available on request.

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SECTION 1

# CALIBRATION

## 1.1 INTRODUCTION

### 1.1.1 General

The purpose of calibration is to take account of any long-term drifts in the components of the instrument and to restore the accuracy, traceable to a known standard.

The period between calibrations depends upon the accuracy performance required from the instrument and for guidance, guaranteed accuracies for 24 hours, 90 days and 1 year are quoted.

The calibration procedures presented in the following pages should cater for most calibration situations. If, however, a special problem arises, please contact our Customer Service Section.

### 1.1.2 The Essentials for Good Calibration

Temperature - So that the instrument can meet its specification over the quoted temperature range, the temperature environment should be stabilised at 23°C ±1°C. In addition, temperature gradients around the instrument should be considered, therefore calibrate the instrument in its normal operating position and allow plenty of room for ventilation.

Warm up - It is essential that the instrument has fully temperature stabilised if the best results from calibration are to be achieved. Therefore, at least a 2 hour warm-up period is recommended during which time the line supply or the covers should not be removed even for a short period. In addition, if the covers have been removed, make certain that they are correctly fitted and that the leaf contacts to the Earth and Guard Shields are in good shape.

Calibration Source - To perform a useful calibration the accuracy of the source should always be at least four times that of the instrument being calibrated. In most cases, examples of likely sources are given for each calibration function.

With some calibration sources, the output may take several seconds to settle to a final value, therefore unless a shorter settling time is assured, a period of 10 seconds is recommended before each calibration operation.

Guarding - It is preferable to arrange for the DVM to be calibrated with 'Local Guard' selected. Furthermore to arrange for the 'Lo' terminal of the DVM to remain at 'earth' throughout and let the calibration source float. If a 'Remote Guard' connection is necessary then examples are shown in the Operating Manual.

### 1.1.3 The 'AUTOCAL' Process

#### 1.1.3.1 General

The Datron 'AUTOCAL' process means that complete calibration of AC, DC, Ohms and Current on every range can be carried out from the instruments own front panel. In the process, an internal non-volatile memory stores calibration constants for each function and range as determined when the instrument takes a series of 16 readings of the applied calibration source. Internally, each of the readings is deviated by one sixteenth of a digit and when an average is taken, the instrument is able to resolve to better than one least significant digit displayed.

Access to the non-volatile memory is gained using a key inserted into the rear panel. When calibration is complete, the key is removed, therefore preventing accidental or unauthorised use of the calibration routine.

#### 1.1.3.2 Procedure Outline

- Select the 'FUNCTION' and 'RANGE' to be calibrated and cancel any 'MODE' or 'COMPUTE' buttons.

Insert the key into the 'CALIBRATE ENABLE' keyswitch on the rear panel and turn to the 'CAL' position. (The 'cal' legend will be displayed on the front panel.)

If the instrument is fitted with Option 50 IEEE Bus, set the rear panel address switch to 31 i.e. all 1's.

- Connect the calibration source to the input terminals and operate the keys shown in the tables in the following pages. When a 'CALIBRATE' button is operated, its associated L.E.D. indicator will light and extinguish when the calibration operation is executed.

- When all calibration is complete turn the keyswitch to 'RUN' and remove the key.

#### 1.1.3.3 The Five 'AUTOCAL' Keys

'Zero' - This takes account of offsets in the instrument and in the calibration source.

'Gain' - This sets a scaling factor for each range and function.

'Ib' - This nulls the input bias current of the DC voltage measurement circuits to around 10pA. Therefore it only has a significant effect on the low DC voltage ranges and high resistance Ohms ranges. It can be operated as often as required and independently of other calibration operations. It will be seen that successive operations of 'Ib' approach the final nulled value of current iteratively.

'AcHf' - This flattens the response of the A.C. amplifier used for AC voltage measurement. It should only be used when a full calibration i.e. 'Zero', 'Gain' and 'AcHf' is carried out. As with 'Ib' the calibration action is iterative and requires several operations of the key to complete.

'Lin' - This is an important calibration operation as it optimises the basic linearity of the internal measurement circuitry used for all ranges and functions. It must be used before any DC voltage or Ohms calibration is carried out.

#### 1.1.3.4 'AUTOCAL' using 'KEYBOARD'

This is an extension of the 'AUTOCAL' process which is useful when using a calibration source set to a nominal value but with known errors. This means for example that calibration directly to a standard cell is possible. A full explanation of the procedure is covered in section 1.7.

#### 1.1.3.5 'AUTOCAL' over the Bus

Each of the five calibration operations can be controlled using Option 50, the IEEE bus. This means that the instrument can be entirely calibrated remotely or under program control. As mentioned in the 'Procedure Outline' for a manual calibration, the rear panel address switch should be set to 31, i.e. all 1's. When a bus calibration is required the address switch must be set to the address number assigned to the DVM in the system. More details of calibration with the bus are included in section 1.8.

#### 1.1.3.6 'Error 4'

If during calibration 'Error 4' is displayed, this indicates that the Calibration Source deviates too far from the calibration span of the instrument. Under these circumstances, the calibration memory is not updated and the instrument goes into 'Hold' with the calibration button calibration key LED remains on.

In the case of 'Zero', 'Gain' or 'AcHf' the Calibration Source should be checked and the same 'CALIBRATE' key repressed. The 'Hold' mode may be released any time and the instrument will free run again. If 'Error 4' follows 'Ib' or 'Lin' or persistently appears following 'Zero', 'Gain' or 'AcHf' then an instrument failure may have occurred. Therefore either consult our Customer Service Section or the Servicing Section of this Handbook.

## 1.2 DC VOLTAGE CALIBRATION

### 1.2.1 General

The procedure in the table opposite is all that is necessary to completely 'AUTOCAL' the DC voltage function. Steps 1 and 2 affect the accuracy on all ranges and should therefore be carried out even if just one range is being calibrated.

On each range a 'Zero' and 'Gain' calibration is required for each polarity of input. The two 'Zero' calibrations are included to overcome a possible zero difference with the polarity setting of the DC calibration source.

If the 'DVM Reading After Calibration' is not in accordance with the table, repeat operations of the same 'CALIBRATE' key are permissible. Where no tolerance is shown in this column, only the exact reading quoted with an occasional least significant digit showing is to be expected.

### 1.2.2 Equipment Required

- 1MΩ 'Lin' Source. This is a 1MΩ 5% resistor in parallel with a 1nF capacitor, shielded to reduce noise interference.

- 10MΩ 'Ib' Source. This is a 10MΩ 5% resistor in parallel with a 1nF capacitor, shielded to reduce noise interference.

Datron products, number 400391 and 400392, are available as 'Lin' and 'Ib' sources and are recommended.

- A DC Calibration Source. e.g.: Datron 4000/4000A Autocal Standard.

### 1.2.3 Checking Accuracy after 'AUTOCAL'

To check the accuracy after 'AUTOCAL' the 'Specification Verification' section of the User's Handbook will be useful; it provides tables for quick reference of accuracy on all ranges and functions in displayed digits.

## DC VOLTAGE CALIBRATION

| Step | Calibration Operation | Calibration Source Output | DVM Setting | 'CALIBRATE' Key | DVM Reading After Calibration | Remarks |
|---|---|---|---|---|---|---|
| 1 | Linearity | 1MΩ Lin Source | DC,1 Filter[1] | 'Lin' | <10 digits (<100 digits) | This calibration step may take a count 30 seconds to complete |
| 2 | Input Bias Current | 10MΩ Ib Source | DC,.1 | 'Ib' | <100 digits | Each subsequent operation of 'Ib' should approximately follow the DVM reading |
| 3 | 10V Range Zero | +0.0000V | DC,10 | 'Zero' | ±0.0000V | |
| 4 | 10V Positive Full Range | +10.0000V | DC,10 | 'Gain' | +10.0000V | |
| 5 | 10V Range Zero | −0.0000V | DC,10 | 'Zero' | ±0.0000V | |
| 6 | 10V Negative Full Range | −10.0000V | DC,10 | 'Gain' | −10.0000V | |
| 7 | 1V Range Zero | +0.00000V | DC,1 | 'Zero' | ±.00000V | |
| 8 | 1V Positive Full Range | +1.00000V | DC,1 | 'Gain' | +1.00000V | |
| 9 | 1V Range Zero | −0.00000V | DC,1 | 'Zero' | ±.00000V | |
| 10 | 1V Negative Full Range | −1.00000V | DC,1 | 'Gain' | −1.00000V | |
| 11 | .1V Range Zero | +0.000mV | DC,.1 | 'Zero' | ±0.000mV ±1 digit | Wait for the reading to stabilize before operating 'Gain' |
| 12 | .1V Positive Full Range | +100.000mV | DC,.1 | 'Gain' | +100.000V ±1 digit | |
| 13 | .1V Range Zero | −0.000mV | DC,.1 | 'Zero' | ±0.000mV ±1 digit | Wait for the reading to stabilize before operating 'Gain' |
| 14 | .1V Negative Full Range | −100.000mV | DC,.1 | 'Gain' | −100.000V ±1 digit | |
| 15 | 100V Range Zero | +0.000V | DC,100 | 'Zero' | ±0.000V | |
| 16 | 100V Positive Full Range | +100.000V | DC,100 | 'Gain' | +100.000V | |
| 17 | 100V Range Zero | −0.000V | DC,100 | 'Zero' | ±0.000V | |
| 18 | 100V Negative Full Range | −100.000V | DC,100 | 'Gain' | −100.000V | |
| 19 | 1000V Range Zero | +0.00V | DC,1000 | 'Zero' | ±0.00V | |
| 20 | 1000V Positive Full Range | +1000.00V | DC,1000 | 'Gain' | +1000.00V | ⚡ Lethal voltages present - increase calibration source in 100V steps if possible |
| 21 | 1000V Range Zero | −0.00V | DC,1000 | 'Zero' | ±0.00V | |
| 22 | 1000V Negative Full Range | −1000.00V | DC,1000 | 'Gain' | −1000.00V | ⚡ Lethal voltages present - increase calibration source in 100V steps if possible |

[1] For 1061A, Input Filter increases resolution by 1 digit – 1061A tolerance given in brackets ( ).

# 1.3 OHMS CALIBRATION

### 1.3.1 General

The procedure in the table opposite is all that is necessary to completely 'AUTOCAL' the Ohms function. If just the Ohms or just one range of the Ohms is to be calibrated, then steps 1 and 2 in the DC Voltage Calibration table should be carried out first. Then on each Ohms range just a 'Zero' and 'Gain' calibration is required.

If the 'DVM Reading After Calibration' is not in accordance with the table, repeat operations of the same 'CALIBRATE' key is permissible to improve the reading. Where no tolerance is shown in this column, only the exact reading quoted with an occasional least significant digit showing is to be expected.

### 1.3.2 'Zero' Resistance Source

For accurate 'Zero' calibration on Ohms it is ESSENTIAL that a correctly connected zero source is used. Two arrangements are necessary as shown in Fig. 1.1; it can be seen that '4 wire Ω' selection is recommended on all ranges.

### 1.3.3 Equipment Required

A set of resistance standards from 10Ω to 10MΩ in decades; it is essential that 10Ω to 100kΩ standards are 4 terminal devices. e.g. Datron 4000/4000A Autocal Standard with Option 20.

### 1.3.4 Checking Accuracy after 'AUTOCAL'

To check the accuracy after 'AUTOCAL' the 'Specification Verification' section of the Operating Handbook will be useful. It provides tables for quick reference of accuracy on all ranges and functions in displayed digits.

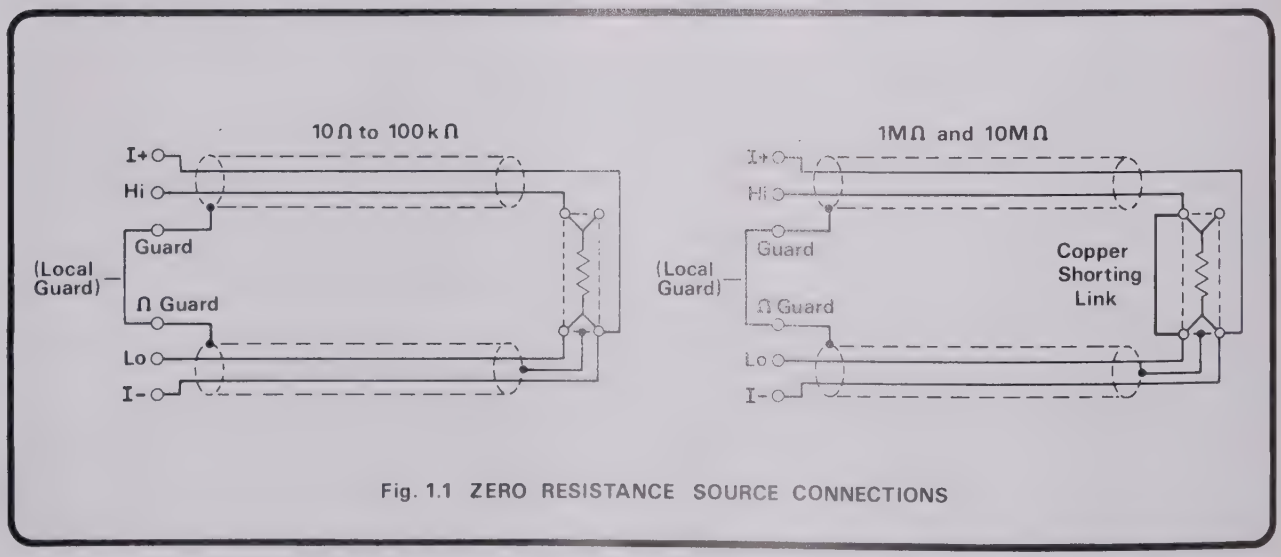



Fig. 1.1 ZERO RESISTANCE SOURCE CONNECTIONS

## OHMS CALIBRATION TABLE

| Step | Calibration Operation | Calibration Source | DVM Setting | 'CALIBRATE' Key | DVM Reading After Calibration |
|---|---|---|---|---|---|
| 1 | 10Ω Range Zero | 4 wire zero | kΩ, 4 wire, 10Ω | 'Zero' | ±0.0000Ω ±1 digit |
| 2 | 10Ω Full Range | 10Ω [1] Standard Resistor | kΩ, 4 wire, 10Ω | 'Gain' | 10.0000Ω ±1 digit |
| 3 | .1kΩ Range Zero | 4 wire zero | kΩ, 4 wire, .1 | 'Zero' | ±0.000Ω |
| 4 | .1kΩ Full Range | 100Ω [1] Standard Resistor | kΩ, 4 wire, .1 | 'Gain' | 100.000Ω |
| 5 | 1kΩ Range Zero | 4 wire zero | kΩ, 4 wire, 1 | 'Zero' | ±.00000kΩ |
| 6 | 1kΩ Full Range | 1kΩ [1] Standard Resistor | kΩ, 4 wire, 1 | 'Gain' | 1.00000kΩ |
| 7 | 10kΩ Range Zero | 4 wire zero | kΩ, 4 wire, 10 | 'Zero' | ±0.0000kΩ |
| 8 | 10kΩ Full Range | 10kΩ [1] Standard Resistor | kΩ, 4 wire, 10 | 'Gain' | 10.0000kΩ |
| 9 | 100kΩ Range Zero | 4 wire zero | kΩ, 4 wire, 100 | 'Zero' | ±0.000kΩ |
| 10 | 100kΩ Full Range | 100kΩ [1] Standard Resistor | kΩ, 4 wire, 100 | 'Gain' | 100.000kΩ |
| 11 | 1000kΩ Range Zero | 4 wire zero | kΩ, 4 wire, 1000 Input Filter[2] | 'Zero' | ±0.00kΩ (±0.000kΩ) |
| 12 | 1000kΩ Full Range | 1000kΩ [1] Standard Resistor | kΩ, 4 wire, 1000 Input Filter[2] | 'Gain' | 1000.00kΩ ±1 digit (1000.000kΩ) (±10 digits) |
| 13 | 10MΩ Range Zero | 4 wire zero | kΩ, 4 wire, 10MΩ Input Filter[2] | 'Zero' | ±0.0000MΩ (±0.00000MΩ) |
| 14 | 10MΩ Full Range | 10MΩ [1] Standard Resistor | kΩ, 4 wire, 10MΩ Input Filter[2] | 'Gain' | 10.0000MΩ ±5 digits (10.00000MΩ) (±50 digits) |

[1] - With Standard Resistor sources it may be useful to use the 'KEYBOARD' method of calibration - see section 1.

[2] - For 1061A, Input filter increases resolution by 1 digit, so 1061A figures are given in brackets ( ).

# 1.4 AC VOLTAGE CALIBRATION – OPTION 10 ONLY

### 1.4.1 General

The procedure in the table opposite is all that is necessary to completely 'AUTOCAL' the AC voltage function. On each range just a 'Zero', 'Gain' and 'AcHf' calibration is required.

If the 'DVM Reading After Calibration' is not in accordance with the table, repeat operation of the same 'CALIBRATE' key is permissible to improve the readings. This will be necessary with the AcHf key.

### 1.4.2 Equipment Required

A copper shorting link and an AC calibration source e.g. Datron 4200 Autocal AC Standard.

### 1.4.3 Checking Accuracy after 'AUTOCAL'

To check the accuracy after 'AUTOCAL' the 'Specification Verification' section of the Operating Handbook will be useful. It provides tables for quick reference of accuracy on all ranges and functions in displayed digits.

## AC VOLTAGE CALIBRATION TABLE (OPTION 10 ONLY)

| Step | Calibration Operation | Calibration Source Output | DVM Setting | 'CALIBRATE' Key | DVM Reading After Calibration | |
|---|---|---|---|---|---|---|
| 1 | DC coupled AC Zero | Copper Shorting link | AC,DC,.1 | 'Zero' | 0.000mV ±3 digits | |
| 2 | .1V Range Zero | Copper Shorting link | AC,.1 | Check only | <100 digits | |
| 3 | 1V Range Zero | Copper Shorting link | AC,1 | 'Zero' | .00000V ±1 digit | |
| 4 | 10V Range Zero | Copper Shorting link | AC,10 | 'Zero' | 0.0000V ±1 digit | |
| 5 | 100V Range Zero | Copper Shorting link | AC,100 | 'Zero' | 0.000V ±1 digit | |
| 6 | 1000V Range Zero | Copper Shorting link | AC,1000 | 'Zero' | 0.00V ±1 digit | |
| 7 | 10V Full Range LF | 10V rms 500 Hz | AC,10 Input Filter | 'Gain' | 10.0000V ±1 digit | |
| 8 | 10V Full Range HF | 10V rms 30 kHz | AC, 10 Input filter | 'AcHf' | 10.0000V ±5 digits | |
| 9 | 1V Full Range LF | 1V rms 500Hz | AC,1 Input filter | 'Gain' | 1.00000V ±1 digit | |
| 10 | 1V Full Range HF | 1V rms 30 kHz | AC,1 Input filter | 'AcHf' | 1.00000V ±5 digits | |
| 11 | .1V Full Range LF | .1V rms 500 Hz | AC,.1 Input filter | 'Gain' | 100.000mV ±2 digits | |
| 12 | .1V Full Range HF | .1V rms 30 kHz | AC,.1 Input filter | 'AcHf' | 100.000mV ±5 digits | |
| 13 | 100V Full Range LF | 100V rms 500 Hz | AC,100 Input filter | 'Gain' | 100.000V ±1 digit | |
| 14 | 100V Full Range HF | 100V rms 30 kHz | AC,100 Input filter | 'AcHf' | 100.000V ±5 digits | |
| 15 | 1000V Full Range LF | 1000V rms 500 Hz | AC,1000 Input filter | 'Gain' | 1000.00V ±1 digit | |
| 16 | 1000V Full Range HF | 1000V rms 20kHz | AC,1000 Input filter | 'AcHf' | 1000.00V ±5 digits | |

# 1.4 AC VOLTAGE CALIBRATION – 1061A OPTION 12 ONLY

### 1.4.4 General

The procedure in the table opposite is all that is necessary to completely 'AUTOCAL' the AC voltage function. On each range just a 'Zero', 'Gain' and 'AcHf' calibration is required.

If the 'DVM Reading After Calibration' is not in accordance with the table, repeat operation of the same 'CALIBRATE' key is permissible to improve the readings. This will be necessary with the AcHf key.

Note: To reduce the effect of noise at low input levels, AC zero calibration is carried out at 0.1% Range; and for 100mV Range zero (steps 1 & 2 of the table), Guard is connected to Lo using a copper shorting link.

### 1.4.5 Equipment Required

A copper shorting link and an AC calibration source e.g. Datron 4200 Autocal AC Standard.

### 1.4.6 Checking Accuracy after 'AUTOCAL'

To check the accuracy after 'AUTOCAL' the 'Specification Verification' section of the User's Handbook can be employed. It describes the use of 'Spec' mode to verify the accuracy of the instrument, also providing a report sheet 'master copy' for compilation of permanent records.

## AC VOLTAGE CALIBRATION TABLE (1061A OPTION 12 ONLY)

| Step | Calibration Operation | Calibration Source Output | DVM Setting | 'CALIBRATE' Key | DVM Reading After Calibration | Remarks |
|---|---|---|---|---|---|---|
| 1 | DC coupled AC Zero | 0.100mV 500Hz (short Guard to Lo) | AC,DC,.1 | 'Zero' | 0.100mV ±10 digits | Set 'Local Guard'. Do not set filter in. Wait for reading to stabilize before operating 'Zero' |
| 2 | .1V Range Zero | Short Hi to Lo to Guard | AC,.1 | Check only | <100 digits | |
| 3 | 1V Range Zero | 0.00100V 500Hz | AC,1 | 'Zero' | 0.00100V ±1 digit | |
| 4 | 10V Range Zero | 0.0100V 500Hz | AC,10 | 'Zero' | 0.010,0V ±1 digit | |
| 5 | 100V Range Zero | 0.100V 500Hz | AC,100 | 'Zero' | 0.100V ±1 digit | |
| 6 | 1000V Range Zero | 1.00V 500Hz | AC,1000 | 'Zero' | 1.00V ±1 digit | |
| 7 | 10V Full Range LF | 10V rms 500Hz | AC,10 | 'Gain' | 10.000,0V ±1 digit | |
| 8 | 10V Full Range HF | 10V rms 30KHz | AC,10 | 'AcHf' | 10.000,0V ±10 digits | |
| 9 | 1V Full Range LF | 1V rms 500Hz | AC,1 | 'Gain' | 1.000,00V ±1 digit | |
| 10 | 1V Full Range HF | 1V rms 30kHz | AC,1 | 'AcHf' | 1.000,00V ±10 digits | |
| 11 | .1V Full Range LF | .1V rms 500Hz | AC,.1 | 'Gain' | 100.000mV ±2 digits | |
| 12 | .1V Full Range HF | .1V rms 30kHz | AC,.1 | 'AcHf' | 100.000mV ±10 digits | |
| 13 | 100V Full Range LF | 100V rms 500Hz | AC,100 | 'Gain' | 100.000V ±1 digit | |
| 14 | 100V Full Range HF | 100V rms 30kHz | AC,100 | 'AcHf' | 100.000V ±10 digits | |
| 15 | 1000V LF Range Gain | 500V rms 500Hz | AC,1000 | 'KEYBOARD 500V' 'Gain' | 500.00V ±1 digit | Lethal voltage present - increase calibration source in 100v steps if possible |
| 16 | 1000V HF Range Gain | 500V rms 20kHz | AC,1000 | 'KEYBOARD 500V' 'AcHf' | 500.00V ±15 digits | Lethal voltage present - increase calibration source in 100V steps if possible. DO NOT EXCEED 25kHz |

# 1.5 DC CURRENT CALIBRATION

**(No DC Current facility if Option 12 is fitted)**

### 1.5.1 General

The procedure in the table below shows all that is necessary to completely 'AUTOCAL' the DC Current function. If just the DC Current or just one range of DC Current is to be calibrated, then step 11 to 14 of the DC Voltage Calibration table should be carried out first. Then on each DC Current range just a 'Zero' and 'Gain' calibration is required.

If the 'DVM Reading After Calibration' is not in accordance with the table then repeat operation of the same 'CALIBRATE' key is permissible to improve the reading. Where no tolerance is shown in this column, only the exact reading quoted with an occasional least significant digit showing is to be expected.

### 1.5.2 Equipment Required

A DC Current calibration source. e.g. Datron 4000/4000A Autocal Standard with Option 20.

### 1.5.3 Checking Accuracy after 'AUTOCAL'

To check the accuracy after 'AUTOCAL' the 'Specification Verification' section of the Operating Handbook will be useful. It provides tables for quick reference of accuracy on all ranges and functions in displayed digits.

DC CURRENT CALIBRATION TABLE

| Step | Calibration Operation | Calibration Source Output | DVM Setting | 'CALIBRATE' Key | DVM Reading After Calibration | Remarks |
|---|---|---|---|---|---|---|
| 1 | .1mA Range Zero | 0.000μA | DC,I,.1 | 'Zero' | ±0.000μA ±1 digit | Do not select 'Input filter' |
| 2 | .1mA Full Range | +100.000μA | DC,I,.1 | 'Gain' | +100.000μA ±2 digits | |
| 3 | 1mA Range Zero | 0.00000mA | DC,I,1 | 'Zero' | ±.00000mA ±1 digit | |
| 4 | 1mA Full Range | +1.00000mA | DC,I,1 | 'Gain' | +1.00000mA ±2 digits | |
| 5 | 10mA Range Zero | 0.0000mA | DC,I,10 | 'Zero' | ±0.0000mA ±1 digit | |
| 6 | 10mA Full Range | +10.0000mA | DC,I,10 | 'Gain' | +10.0000mA | |
| 7 | 100mA Range Zero | 0.000mA | DC,I,100 | 'Zero' | ±0.000mA | |
| 8 | 100mA Full Range | +100.000mA | DC,I,100 | 'Gain' | +100.000mA | |
| 9 | 1000mA Range Zero | 0.00mA | DC,I,1000 | 'Zero' | ±0.00mA | |
| 10 | 1000mA Full Range | +1000.00mA | DC,I,1000 | 'Gain' | +1000.00mA | |

# 1.6 AC CURRENT CALIBRATION

**(In conjunction with Option 10 only)**

### 1.6.1 General

The procedure in the table below shows all that is required to completely 'AUTOCAL' the AC Current function. If just the AC Current or just one range of AC Current is to be calibrated, then steps 1, 2, 11 & 12 of the Option 10 AC Voltage Calibration table must be carried out first. Then on each range just a 'Zero' and 'Gain' calibration is required.

If the 'DVM Reading After Calibration' is not in accordance with the table then repeat operations of the same 'CALIBRATE' key is permissible to improve the reading.

### 1.6.2 Equipment Required

An AC Current calibration source at 1kHz, e.g. Datron 4200 Autocal AC Standard with option 10.

### 1.6.3 Checking Accuracy after 'AUTOCAL'

To check the accuracy after 'AUTOCAL' the Specification Verification section of the Operation Handbook will be useful. It provides tables for quick reference of accuracy on all ranges and functions at displayed digits.

**AC CURRENT CALIBRATION TABLE**

| Step | Calibration Operation | Calibration Source Output | DVM Setting | 'CALIBRATE' Key | DVM Reading After Calibration | |
|---|---|---|---|---|---|---|
| 1 | DC coupled AC Zero | No connections to DVM input terminals | I,DC,AC,.1 | 'Zero' | 0.000μA ±5 digits | Do not select 'Input Filter' |
| 2 | .1mA Range Zero | " | I,AC,.1 | Check only | <±100 digits | Connect Equipment |
| 3 | 1mA Range Zero | " | I,DC,AC,1 | 'Zero' | .00000mA ±5 digits | |
| 4 | 10mA Range Zero | " | I,DC,AC,10 | 'Zero' | 0.0000mA ±5 digits | |
| 5 | 100mA Range Zero | " | I,DC,AC,100 | 'Zero' | 0.000mA ±5 digits | |
| 6 | 1000mA Range Zero | " | I,DC,AC,1000 | 'Zero' | 0.00mA ±5 digits | |
| 7 | .1mA Full Range | 100μA, 1kHz | I,DC,AC,.1 | 'Gain' | 100.000μA ±10 digits | |
| 8 | 1mA Full Range | 1mA, 1 kHz | I,DC,AC,1 | 'Gain' | 1.00000mA ±10 digits | |
| 9 | 10mA Full Range | 10mA, 1 kHz | I,DC,AC,10 | 'Gain' | 10,0000mA ±10 digits | |
| 10 | 100mA Full Range | 100mA, 1 kHz | I,DC,AC,100 | 'Gain' | 100,000mA ±10 digits | |
| 11 | 1000mA Full Range | 1A, 1 kHz | I,DC,AC,1000 | 'Gain' | 1000.00mA ±10 digits | |

# 1.7 CALIBRATION USING 'KEYBOARD'

### 1.7.1 General

The 'KEYBOARD' method of calibration is useful when a calibration source although set to a nominal value has known errors. In this situation the known value of the calibration source can be entered into the DVM before the 'AUTOCAL' process is executed. The process is functional during any calibration with a source of magnitude between 20% and 200% of the range selected, but it should be noted that for equal magnitude source errors, calibrating at the lower percentage end of range produces a higher percentage calibration error. The 'KEYBOARD' method operates for both the 'Gain' and 'AcHf' calibration operations. An example using 'KEYBOARD' to calibrate directly against a Standard Cell is shown in the table below.

### 1.7.2 'KEYBOARD' with Negative Inputs

If the 'KEYBOARD' method is used on DC Voltage calibration with Negative polarity sources, it is important NOT to enter a negative sign with the keyed-in source value. The instrument itself can determine the polarity of the source and update the appropriate calibration memory location.

### 1.7.3 'KEYBOARD' Calibration Example

The example shown in the table below uses 'KEYBOARD' to calibrate the 1000V AC LF Range Gain at 500V (step 15 of the AC Voltage Calibration table for Option 12).

**CALIBRATION EXAMPLE USING 'KEYBOARD'**

| Step | Calibration Operation | Calibration Source | DMM Setting | 'CALIBRATE' Key | DMM Reading After Calibration | Remarks |
|---|---|---|---|---|---|---|
| 1 | 1000V Range Zero | 1.00V rms 500Hz | AC,1000 | 'Zero' | 1.00V ±1 digit | |
| 2 | Set and Enter Source Value | 500.00V rms 500Hz | 'KEYBOARD' then 5,0,0,-,0,0 | – | 0 then +500.00 | Lethal voltage present. Increase Calibration Source in 100V steps if possible |
| 3 | 1000V AC LF Range Gain Calibration | As above | – | 'Gain' | 500.00V ±1 digit | |

# 1.8 'AUTOCAL' OVER THE BUS

All the calibration procedures covered in this manual can be carried out remotely using Option 50, the IEEE Bus.

Effectively, the five calibration keys are replaced by five Bus instructions and these are used instead of the 'CALIBRATE' keys listed in the Calibration tables on previous pages.

An example of calibration with the Bus is given in the table below. A complete program listing for the same calibration operation assuming an HP9825 controller is as follows:—

```
Ø: dim D$[15]          define 15 character string
                       variable
1:  clr 728            send 'device clear' to DVM
                       (interface 7, address 28)
2: wrt 728,"F3R3Q1W1="  program to DC 1V, SRQ
                       Mode 1, Enable Cal.
3: Ø→S
4: wrt 728,"GØ="       program zero cal. trigger
5: oni 7,"srq"         jump to SRQ service routine
                       on interrupt
6: eir 7,128           enable SRQ interrupts from
                       interface 7
7: if bit ("Ø1XXXXXX",S)  check status byte S
   =Ø;jmp -1           obtained by service routine
8: dsp "Apply 1V &     prompt operator to apply
   CONTINUE"           calibration source on com-
                       pleting zero cal
9: Ø→S;stp
10: wrt 728,"G1="      program gain cal. trigger
11: oni 7,"srq"
12: eir 7,128
13: if bit ("Ø1XXXXXX",S)
   =Ø;jmp -1
14: wrt 728,"TØWØ="    program to Internal Trigger,
                       Disable Cal. on completion
                       of gain cal.
15: lcl 728            program DVM to local state
16: stp
17: "srq":rds(728)→S   SRQ service routine to read
                       status byte
18: red 728,D$
19: iret
*7717
```

**CALIBRATION EXAMPLE USING THE BUS**

| Step | Calibration Operation | Calibration Source | DVM Setting | Bus Controller Instruction | DVM Reading After Calibration | Remarks |
|---|---|---|---|---|---|---|
| 1 | Set DVM to known state | — | In Remote State | 'Device Clear' | — | Program DVM to predetermined state AØCØDXEØF3MØNØ OØPØQØR6SØT5 |
| 2 | Set DVM to DCV, 1V Range, and prepare for calibration | +0.00000V | Calibration key to 'CAL' | 'F3R3Q1W1=' | — | Program DVM to Function: DC V(F3) Range: 1V (R3) SRQ Mode 1 (Q1) Enable Cal. (W1) |
| 3 | 1V Range Zero | +0.00000V | In Remote State | 'GØ=' | ±.00000V | Program 'Zero' cal., SRQ indicates when calibration operation completed |
| 4 | 1V Positive Full Range | +1.00000V | In Remote State | 'G1=' | +1.00000V | Program 'Gain' cal., SRQ indicates when calibration operation completed |
| 5 | Set DVM to Internal Trigger, Disable Cal. | — | In Remote State | 'TØWØ=' | — | Program DVM to Internal Trigger (TØ), Disable Cal. (WØ) |
| 6 | — | — | In Local State, Calibration key to 'RUN' | 'Local' | — | DVM in normal mode, free-running |

SECTION 2

# MECHANICAL DESCRIPTION

## 2.1 GENERAL

The 1061 has been designed to be either rack mounted in a standard 19" rack (3½" (2U) height required) or bench top/portable with integral tilt stand. An exploded view of the instrument is shown in Fig 2.1.

## 2.2 FRONT PANEL

The front panel incorporates the signal input terminals, range, function, mode, keyboard, compute and power switches and a numeric/legend gas discharge display.

## 2.3 REAR PANEL

The rear panel incorporates the mains supply, power input socket and fuses, digital and analog output sockets, rear and ratio signal input sockets, rear/front panel signal input selection switch, run/calibrate keyswitch, calibration interval (error) select switch and current option fuse.

## 2.4 EXTERNAL CONSTRUCTION

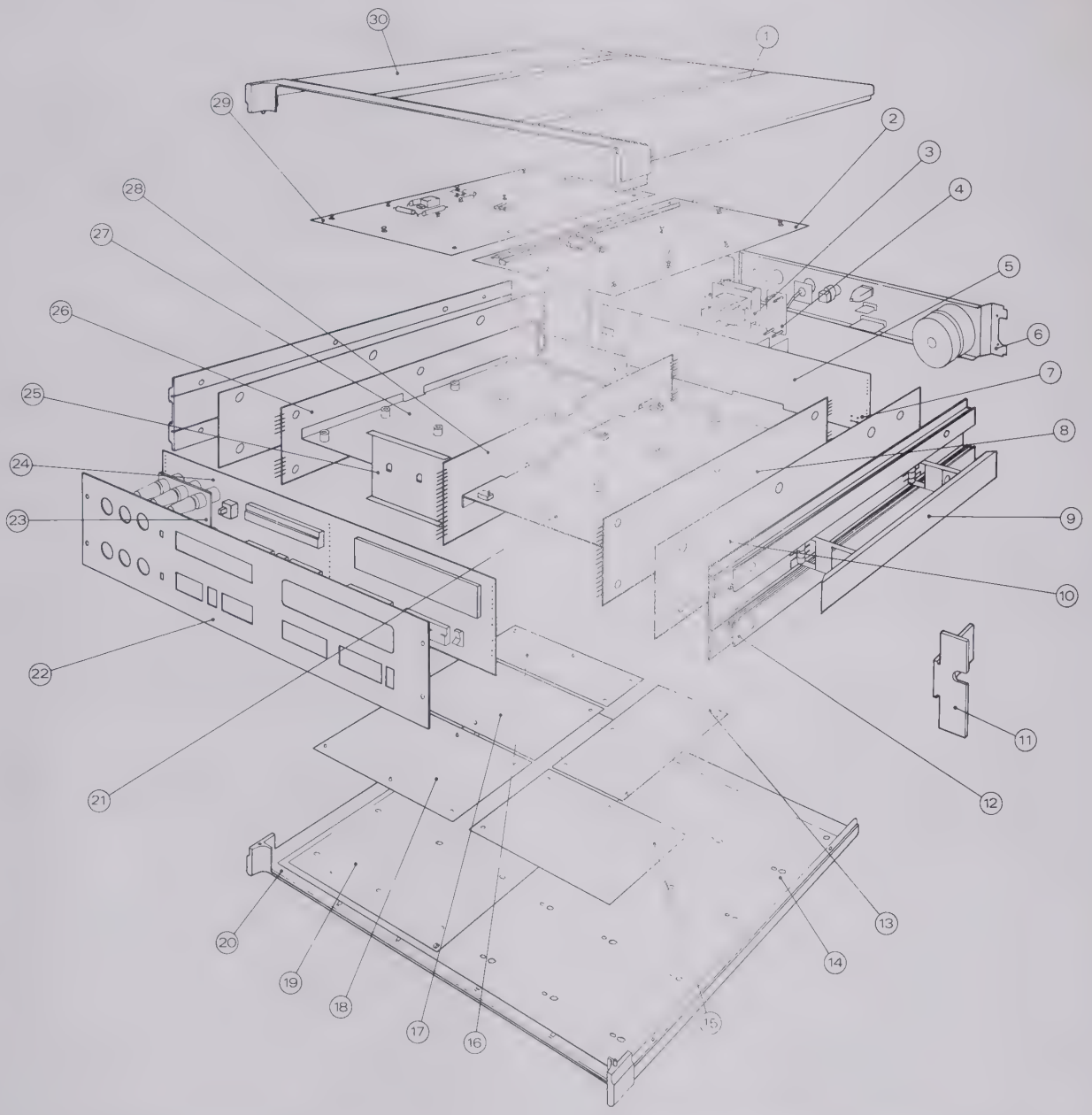
A screen printed key designation overlay adheres to the front panel retaining the polarising filter in front of the display. Both the front and rear panels are held together by two side extrusions running from front to rear. These side extrusions provide both slots for the handles or rack mounting 'ears' and locating points for the structural foam covers. The bottom cover is fitted with the tilt stand, rubber feet and instruction card. Earth screening of the covers and guarding is provided by aluminium plates, heat-staked to the inside of the covers with electrical connections made by spring contacts.

## 2.5 INTERNAL CONSTRUCTION

An internal chassis is constructed [illegible] circuit boards, held together by connec[illegible] and held rigid by two inner aluminiun[illegible] zontally on the instrument's centre [illegible] front to rear. Input terminals, switche[illegible] mounted on the front printed circuit [illegible] power supply on the rear pcb. The t[illegible] pcb's are used for interconnections [illegible] circuit boards.

All the main circuit boards are mou[illegible] shields with hinges and quick release faste[illegible] connections to allow operation in the [illegible] The Analog output circuitry is fixed or [illegible] the chassis and the Ratio/Rear Input c[illegible] rear panel. The options are mechanically [illegible] no soldering.

The chassis is mounted on to the si[illegible] nylon screws, spacers and an insulati[illegible] that the 'electrical spacings' of the [illegible] specifications are achieved.




1. REAR GUARD SCREEN
2. DIGITAL ASSEMBLY
3. RATIO/REAR INPUT ASSEMBLY (OPTION)
4. ANALOG OUTPUT ASSEMBLY (OPTION)
5. REAR (POWER SUPPLY) PCB ASSEMBLY
6. REAR PANEL ASSEMBLY
7. POWER SUPPLY VOLTAGE SELECTION LINKS
8. R.H. PCB ASSEMBLY
9. HANDLE ASSEMBLY
10. INSULATION SHEET
11. RACK MOUNTING BRACKET
12. SIDE EXTRUSION
13. DIGITAL INTERFACE ASSEMBLY (OPTION)
14. EARTH SCREEN
15. DISPLAY DRIVER ASSEMBLY
16. CURRENT ASSEMBLY (OPTION) } See Note [1]
17. AC ASSEMBLY (OPTION 10) }
18. OHMS ASSEMBLY (OPTION)
19. OUTER GUARD SCREEN
20. BOTTOM COVER ASSEMBLY
21. R.H. CENTRE GUARD SCREEN
22. FRONT PANEL AND OVERLAY
23. TERMINAL SUPPORT PLATE
24. FRONT PCB ASSEMBLY
25. FRONT GUARD SCREEN
26. L.H. PCB ASSEMBLY
27. L.H. CENTRE GUARD SCREEN
28. CENTRE PCB ASSEMBLY
29. ANALOG ASSEMBLY
30. TOP COVER ASSEMBLY

**FIG. 2.1 EXPLODED VIEW OF INSTRUMENT**

[1] AC Assembly for 1061A Option 12 is fitted in place of AC Option 10 and Current Option 30 pcb assemblies

SECTION 3

# TECHNICAL DESCRIPTION

## 3.1 INTRODUCTION

The internal circuits of the basic DC only instrument are divided between five printed circuit board assemblies (shown in bold outline in Fig. 3.1).

For the purpose of explanation, each assembly will be described separately and each assembly further sub-divided according to the various functions involved.

## 3.2 ANALOG ASSEMBLY (Circuit Drawing No. 430328)

The Analog assembly is split into three distinct sections: (i) the Analog Interface, (ii) the DC Isolator and (iii) the Analog to Digital (A - D) Converter.

The Analog Interface receives data from the Digital assembly to control the selection, range scaling and other features of the analog circuitry. Messages between the Analog and Digital assemblies are passed via opto-isolators, electrically isolating one from the other.

The DC Isolator includes the preamplifier, range scaling circuits and bootstrapped supplies. The A - D section converts the scaled input signal to a time period proportional to the signal using a modified triple slope technique.

### 3.2.1 Analog Interface (430328 sheet 5)

#### 3.2.1.1 Introduction

The Analog Interface provides electrical isolation between the Digital and Analog circuitry. Latched data from the microprocessor is passed through opto-isolators, decoded and latched again on an ana[illegible] function, range, test, average and [illegible] up conditions. A line is also provided [illegible] processor which options are present a[illegible] is measuring a signal above 5kHz.

#### 3.2.1.2 Power-On

At power-on the A - D conver[illegible] RESET condition (See Section 3.2.3[illegible] cuitry is then interrogated to discer[illegible] any) are fitted. Finally the analog cir[illegible] the DC, 1000V range until a differe[illegible] is selected (See Fig. 3.3).

To determine which options are [illegible] assembly sends a series of messages [illegible] barrier, decodes them on the analog si[illegible] with lines from the option assemblies [illegible] back across the isolation barrier to the

Looking at the procedure, in mo[illegible] Interface Data (ID) lines are all set to a [illegible] which is set to a logic '0', depending [illegible] interrogated (See Fig. 3.2). As an exam[illegible] see if the AC option is fitted. ID1 is [illegible] the ID lines set high and the Analog [illegible] lines, IAØ and IA1 set low. The opto [illegible] signals, thus M17-3 is low and M19 pin [illegible] high. If the AC option is *not* fitted M19[illegible] R55 from M17-3, causing M19-3 to be [illegible] logic '0' (−15 volts) on M18-4. If the A[illegible] 33kΩ resistor on the AC assembly (R14) [illegible] and a high is placed on M19-2. The effe[illegible]

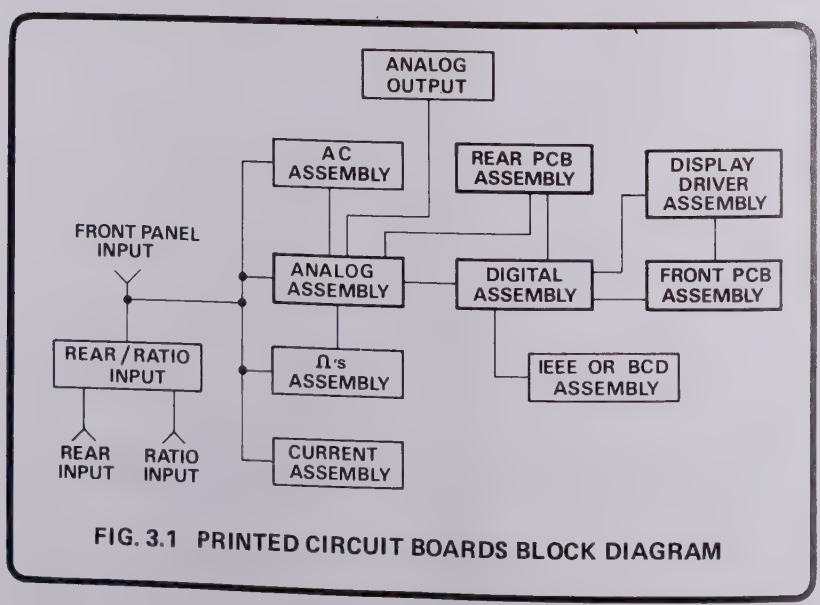



FIG. 3.1 PRINTED CIRCUIT BOARDS BLOCK DIAGRAM

| Option checked | ID line low | Pin No. of M19 held low if Option incorporated |
|---|---|---|
| AC | ID 1 | M19-3 |
| Ω | ID 2 | M19-11 |
| I | ID 3 | M19-4 |
| RATIO | ID 4 | M19-10 |

**Fig. 3.2 POWER-ON OPTIONS FITTED TEST**

high on M18-4, turning the opto-isolator M2-B on and thus COND. VAL (M2-8) is high, signalling to the Digital assembly that the AC option is fitted. Similarly, when the Ω, I or RATIO options are interrogated, the appropriate output of M19 is set low if the option is fitted causing the COND. VAL to be set high.

*Note: ID and IA lines
logic '1' ≡ +5 volts logic '0' ≡ 0 volts
AD lines
logic '1' ≡ 0 volts logic '0' ≡ −15 volts

The next step in the power-up sequence as far as the analog circuits are concerned, is to be placed into the DC, 1000V range (See Fig. 3.3 Flowchart). Firstly, all assemblies are deselected by placing logic '1's on all the ID lines, then setting the IAØ and IA1 lines low (see Fig. 3.4), clocking the option selects latches (M20 Analog assembly, M5 AC assembly, M9 Ohms assembly, M1 Ratio assembly from M17-3. Both IA lines then return high.

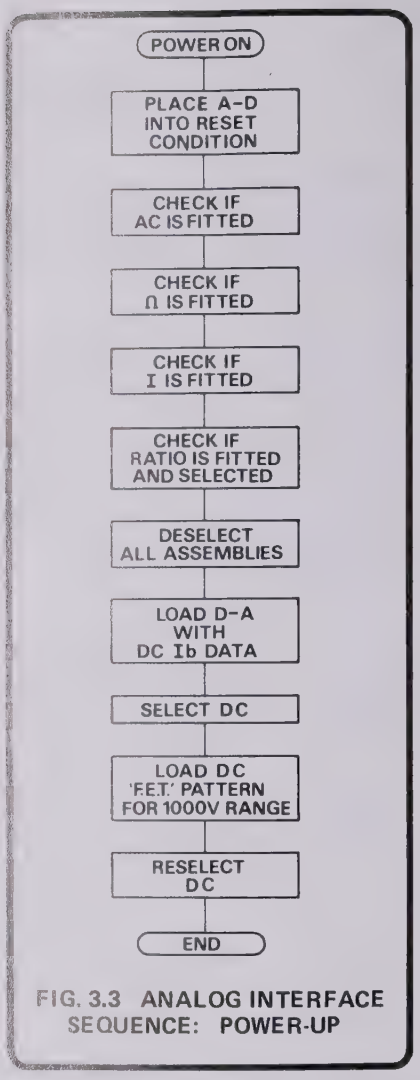

POWER ON
PLACE A-D INTO RESET CONDITION
CHECK IF AC IS FITTED
CHECK IF Ω IS FITTED
CHECK IF I IS FITTED
CHECK IF RATIO IS FITTED AND SELECTED
DESELECT ALL ASSEMBLIES
LOAD D-A WITH DC Ib DATA
SELECT DC
LOAD DC 'F.E.T.' PATTERN FOR 1000V RANGE
RESELECT DC
END

**FIG. 3.3 ANALOG INTERFACE SEQUENCE: POWER-UP**

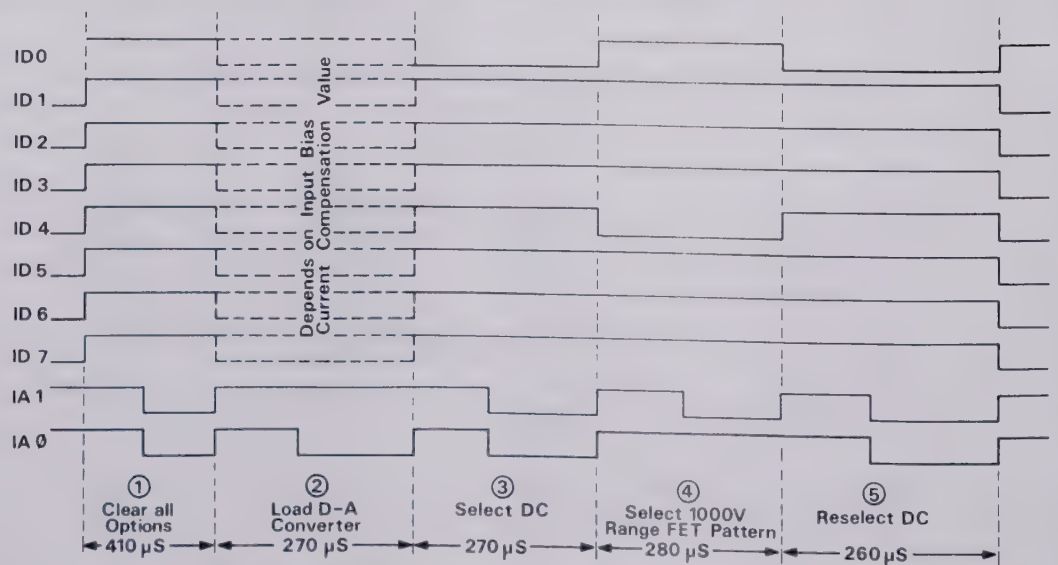



**FIG. 3.4 ANALOG INTERFACE DATA LINE TIMING DIAGRAM (POWER-UP)**

Secondly, the latches of the D - A converter (M13, M14) are set up with the input bias current (Ib) compensation data. The ID lines are set to the appropriate pattern and the information is clocked on to M13 and M14 by a delayed low to high edge from M17-4, originating from IAØ going low. The delay makes sure that the signal from M17-10 has disabled the "F.E.T." latch M21. Once again, the IAØ line returns to the resting state of logic '1'. Thirdly, the DC analog circuits are enabled by setting all the ID lines high except for ID0, then clocking M20 by a low to high edge from M16-6 caused by both IA lines going low. Once DC has been selected, the F.E.T. pattern latch is enabled from M12-1, and the penultimate step is to load this latch with 1000V range data from the ID lines (ID4 low, the rest high). This is executed by clocking the 'F.E.T.' latch from M17-4 once again, but this time being due to IA1 going low. The final step is to reselect DC as described above.

### 3.2.1.3 General Interface Update Sequence

Before the start of each reading, the analog interface undergoes a complete update. The series of events is the same as the power-up sequence for selection of function and range, as can be seen by comparing the two flowcharts (Figs. 3.3 and 3.5). When Ohms or Current is selected, the DC Isolator or AC assembly is also used in the measurement procedure as seen in the following table.

| Type of Measurement | Circuits Selected | Use of D - A |
|---|---|---|
| DC Volts | Analog Assembly | Input Bias Current Compensation |
| AC Volts | AC Assembly | Frequency Compensation |
| AC + DC Volts | AC Assembly | Frequency Compensation |
| Resistance | Ohms Assembly and Analog Assembly | Input Bias Current Compensation |
| DC Current | Current Assembly and Analog Assembly | Input Bias Current Compensation |
| AC Current | Current Assembly and AC Assembly | Frequency Compensation |
| AC + DC Current | Current Assembly and AC Assembly | Frequency Compensation |

The update sequence order is (i) Deselect all assemblies, (ii) Load D - A latches, (iii) Select AC assembly or DC Isolator, (iv) Load range pattern into DC or AC range latches, (v) Deselect DC or AC and select either the Ohms or Current assembly, (vi) Load range pattern into Ω's or I range latches, (vii) Reselect circuits selected in (iii) and (iv).

Note: Steps (v) and (vi) are used only when I or Ω is selected.

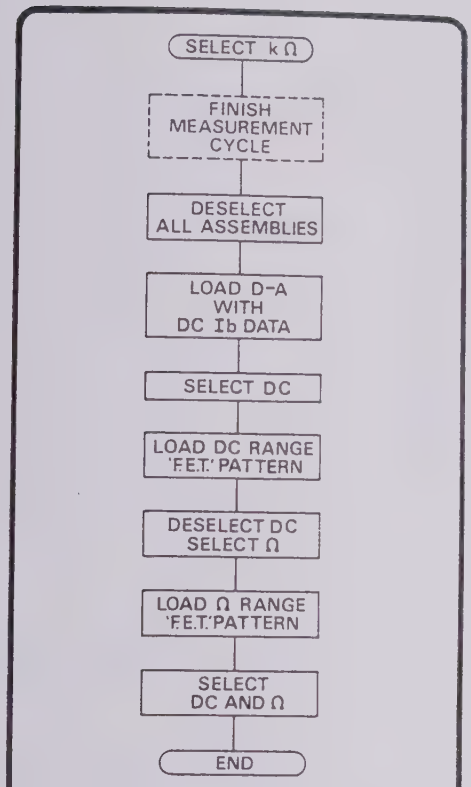



FIG. 3.5 ANALOG INTERFACE SEQUENCE: OHMS SELECT

Flowchart 3.5 gives the above sequence for an ohms update. The general form of the timing diagram for the above sequence is given in Fig. 3.6, the analog 'F.E.T.' patterns for each range of each function being given in Appendix 1.

### 3.2.1.4 Test

When TEST is selected, a logic '0' is placed on ID7 at stages (iii), (v) and (vii) in Fig. 3.6, i.e. each time a function measurement circuit is selected. Appendix 1 lists the 'F.E.T.' patterns of each assembly for each test measurement cycle.

## 3.2.2 DC Isolator Section

### 3.2.2.1 Preamplifier Scaling (430328 sheet 1)

Figure 3.8 shows the essential features of the isolator scaling circuit. For the purpose of explanation the same symbols are used, regardless of whether the switching is accomplished electronically (F.E.T.) or by means of relay contacts. In Fig. 3.8 all switches are shown in the 1V RANGE position.

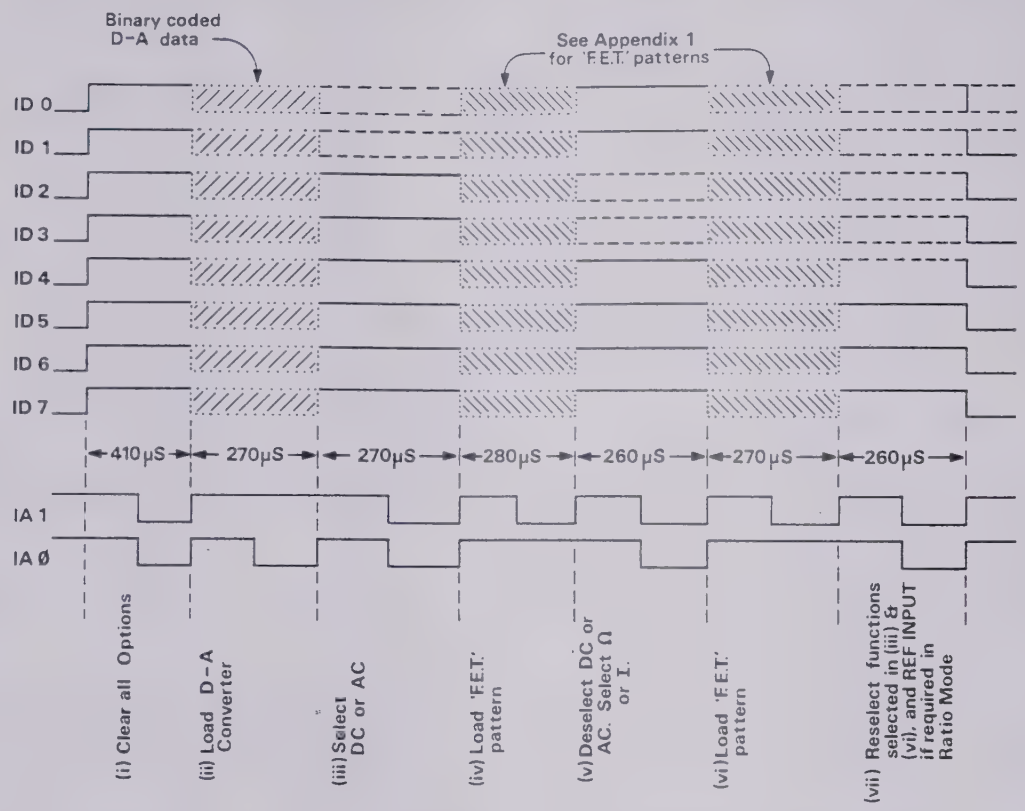



FIG. 3.6 GENERAL FORM OF ANALOG INTERFACE UPDATE TIMING DIAGRAM

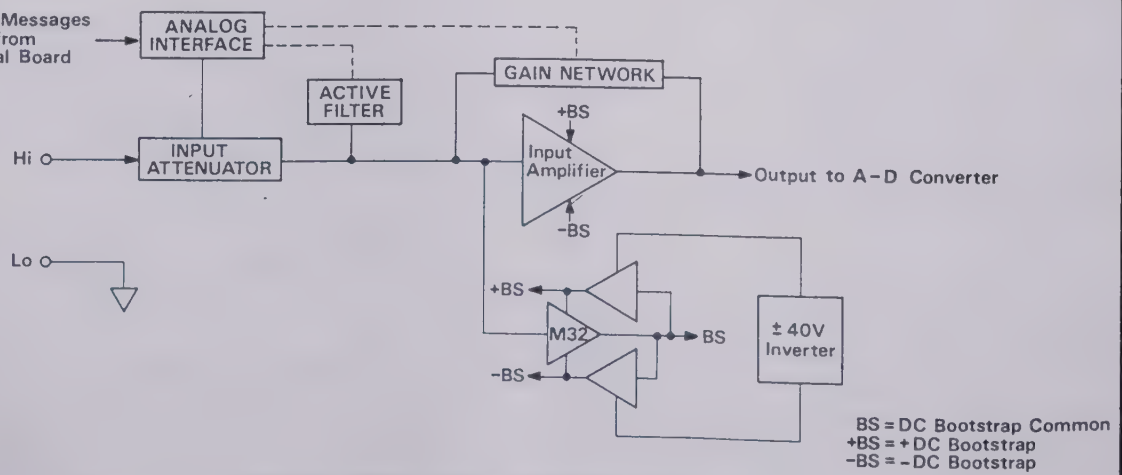



FIG. 3.7 SIMPLIFIED DIAGRAM OF DC ISOLATOR

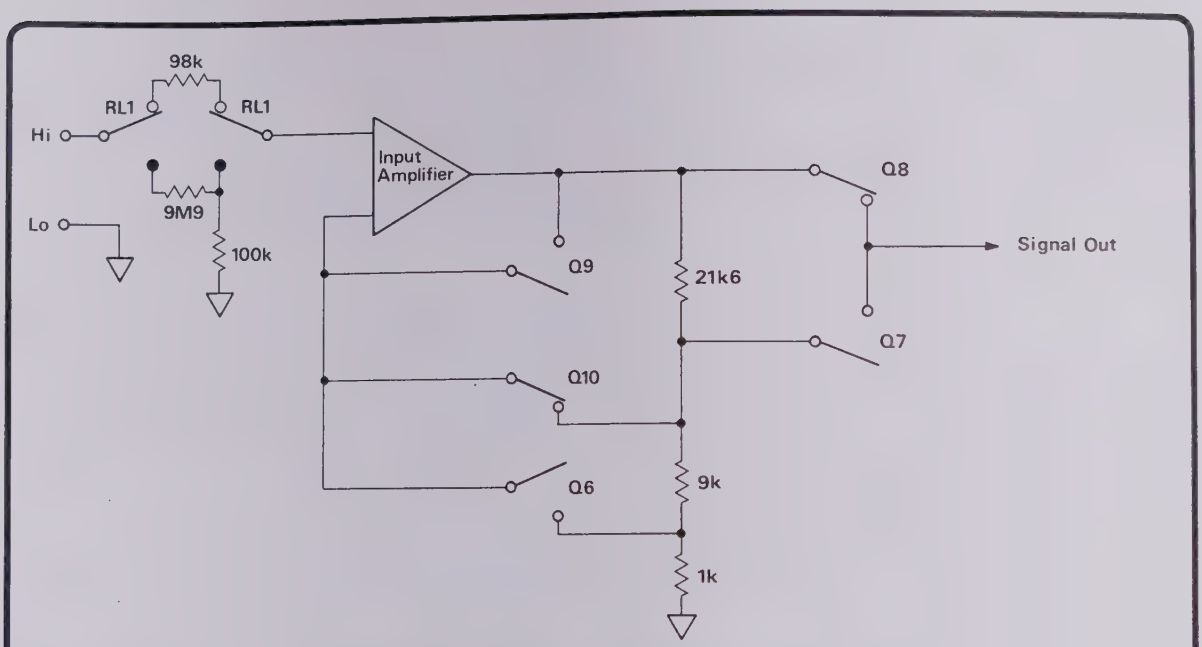



FIG. 3.8 SIMPLIFIED DIAGRAM OF ISOLATOR SWITCHING

The various switching combinations for the different ranges are as follows:—

| Range | Gain | Q6 | Q7 | Q8 | Q9 | Q10 | RL1 |
|---|---|---|---|---|---|---|---|
| 100mV | x31.6 | ON | OFF | ON | OFF | OFF | ON |
| 1V | x3.16 | OFF | OFF | ON | OFF | ON | ON |
| 10V | ÷3.16 | OFF | ON | OFF | ON | OFF | ON |
| 100V | ÷31.6 | OFF | OFF | ON | OFF | ON | OFF |
| 1000V | ÷316 | OFF | ON | OFF | ON | OFF | OFF |
| DC | | OFF | OFF | OFF | ON | OFF | OFF |

The configuration of the circuit for each range is shown in Fig. 3.9.

Reference should be made to circuit diagram number 430328, sheet 1, for the complete circuit. Sheet 2 gives tables of the coding on the input control lines (from the Analog Interface).

When the 100V or 1kV range is selected, a ÷100, 10MΩ input attenuator (R143, R156, R149, R148) is incorporated into the circuit. This is a matched set of resistors for low temperature coefficient. The selection of a lower range energizes relay RL1 (via Q33), causing resistor chain R119-R122 to be in series with the Hi input. Should an overload signal then be applied, the resistor chain limits the current and the power dissipation is such that 1000V can be applied continuously.

The amplifier end of the resistors is clamped by zener diodes D22, D23 and Q18, Q19 to low, thus the amplifier input can never exceed approximately ± 24 volts.

The output from the DC Isolator, test point (TL8) is approximately 3.16 volts ( $\approx\sqrt{10}$ ) for a full range (100,000) input by the following methods (See Fig. 3.9):—

**100mV Range** Q6 and Q8 are turned on; all other F.E.T.'s are turned off and RL1 energised. Thus the output of the amplifier is connected to its inverting input via R108, R109, R110, R111 and Q6, an attenuator chain of ÷31.6, giving the amplifier an overall gain of X 31.6 Q8 connects the preamplifier directly to the output.

**1V Range** Q10 and Q8 are turned on, all other F.E.T.'s are turned off and RL1 energised. The output of the amplifier is connected to its inverting input via R108, R109, R110, R111 and Q10, an attenuator chain of ÷3.16, giving the amplifier an overall gain of X 3.16. Q8 connects the preamplifier directly to the output.

**10 V Range** Q9 and Q7 are turned on; all other F.E.T.'s are turned off and RL1 energised. Q9 causes the amplifier output to be directly connected to its inverting input, giving a gain of unity. The output of the amplifier is attenuated by 3.16 (R114, R115) before being passed to the output via Q7 instead of Q8.

**100V and 1000V Ranges** These two ranges select the 1V and 10V ranges respectively but a ÷100 attenuator (R149, R156, R143, R148) is inserted between Hi and the preamplifier input when RL1 is de-energised.

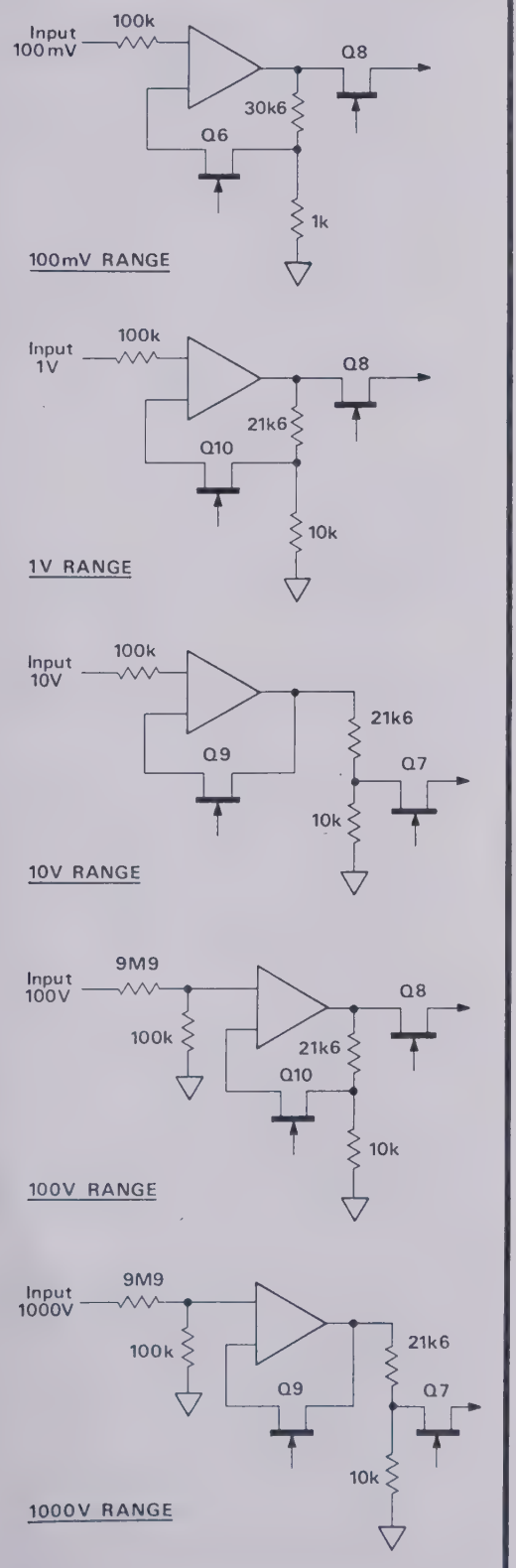



FIG. 3.9 PREAMPLIFIER GAIN CIRCUITS

### 3.2.2.2 Preamplifier (430328 sheet 1)

The preamplifier is designed to present an input impedance of greater than 10,000MΩ for signals up to ± 20 volts. It is also bootstrapped (tracking of both ground lines and supply voltages with input signal) being essential for correct operation of input bias compensation, temperature compensation and common mode rejection.

Q12 is a well matched monolithic NPN transistor pair exhibiting minimal voltage drift and low noise characteristics, the output being buffered by M31. To compensate for the current gain drift of Q12 (approx. −1%/°C), the change in the base-emitter voltage of one half of Q12 is sensed by M30. The drift compensation is linearised to 1%/°C by thermistor R218. Thus the input bias current is kept constant with temperature.

### 3.2.2.3 D.C. Bootstrap (430328 sheet 2)

Bootstrapped supplies are generated which track the input signal directly (BS), track the input signal with a positive offset of +12V(+BS) and track the input signal with a negative offset of −12(−BS).

M32 is the high inpedance buffer which tracks the inverting input of the preamplifier. The offset of M32 is adjusted so that its input is within 100μV of the input of the preamplifier. M32 thus functions as the low impedance rail (BS) following the input signal.

Selection of DC(M20-3) enables the capacitive inverter driven from M33 to provide an unregulated +42V(TL4) and −42V(TL5) supply from the ±15V supply.

The positive bootstrap supply (+BS) is generated as a current source comprising Q26 and the shunt regulator, Q27, referenced to D50. When the output voltage of the regulator is approximately 1.2 volts above D50 cathode, Q27 conducts current into R175. Since the current in R175 is controlled to be constant by Q30, referenced to D50, the current flowing through R174 is reduced. Hence the supply current, "mirrored" in R173, is reduced and the output voltage controlled.

The negative bootstrap supply (−BS) is generated in a similar manner. Thus bootstrapped supplies of approximately ±12 volts are produced, tracking the input signal exactly.

### 3.2.2.4 Filtering (430328 sheet 1)

Selection of filter causes an active filter to be switched in by relay, RL2, (via Q32). The filter gives an attenuation of −34 dB at 50Hz. The essential components of the filter are shown in Fig. 3.10.

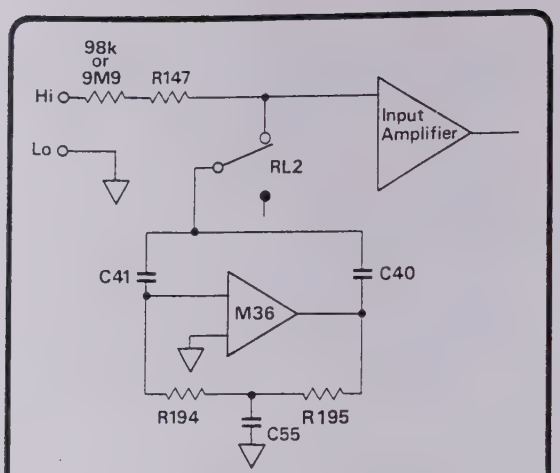



FIG. 3.10 SIMPLIFIED DC ISOLATOR FILTERING CIRCUIT

### 3.2.2.5 Input Current (Ib) Compensation (430328 sheets 1 and 5)

During the calibration cycle, the microprocessor notes and stores the zero error due to the bias current (measured in a known source resistor). When DC is selected, this information is recalled by the microprocessor, transferred across the isolation barrier and latched into M13 and M14, see Fig. 3.11.

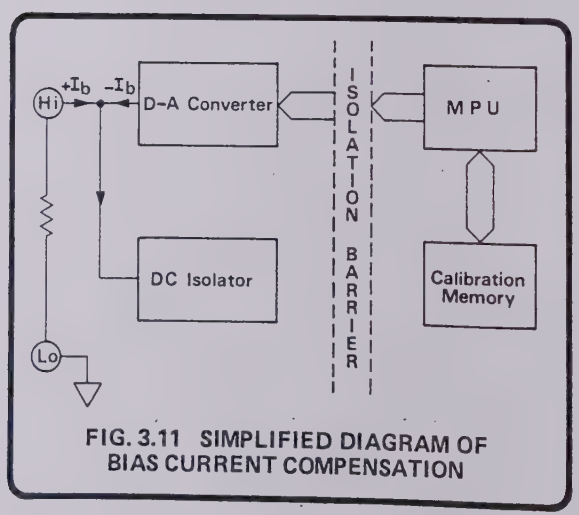



FIG. 3.11 SIMPLIFIED DIAGRAM OF BIAS CURRENT COMPENSATION

The output from the latches is applied to the binary resistor ladder network, AN2, providing a 255 step digital to analog conversion. The analog signal is applied to the inverting input of M3 so that the output drives current, through the diode, to control the current in the corresponding transistor of the opto-isolator, M23. The transistor of the opto-isolator sinks current to the −15V supply until the voltage across R198 is equal to the voltage applied to the inverting input of M3.

The other half of the opto-isolator acts as a current mirror, referenced to the bootstrap (BS) supply. Thus the input current correction is floated on the bootstrap supply, tracking the input signal is divided by R84 to R128 and R129 to null the bias current of the preamplifier.

### 3.2.2.6 Test (430328 sheets 1 and 5)

During the self-test routine, (actuated from the front panel or remotely programmed) the DC isolator is checked for correct operation. The circuitry is placed into the 0.1V range, as described in 3.2.1.3, except that relay RL1 is not energized, (i.e. the ÷ 100 attenuator is across the input amplifier). Filter is selected and F.E.T. Q5 'closed' via M20-5 causing a small signal to be injected into the feedback path of the input amplifier. Thus a signal of −3.125 volts is output from the DC Isolator (TL8). This signal is then measured and compared with a stored value. If the measured signal is within ±6% of the stored value, the test continues with a 1V range check and a 10V range check.

| Range | Output signal from DC Isolator (TP13) |
|---|---|
| 0.1V | − 3.125 volts |
| 1V | − 0.2193 volts |
| 10V | − 0.06932 volts |

DC Isolator Output Test Voltages

### 3.2.3 Analog to Digital Conversion (Analog Section) (430328 sheets 3 and 4)

#### 3.2.3.1 General Principles

Section 1 and Fig. 1.2 of the User's Handbook gives a very basic description of the principles of the integration involved. The technique used in the Autocal Voltmeter is a quadruple slope, the two extra slopes being towards the end of the signal and reference integration periods respectively.

Fig. 3.12 is a simplified diagram showing the essentials of the analog section of the A - D conversion and should be used with timing diagram Fig. 3.13 for full appreciation of the circuit operation.

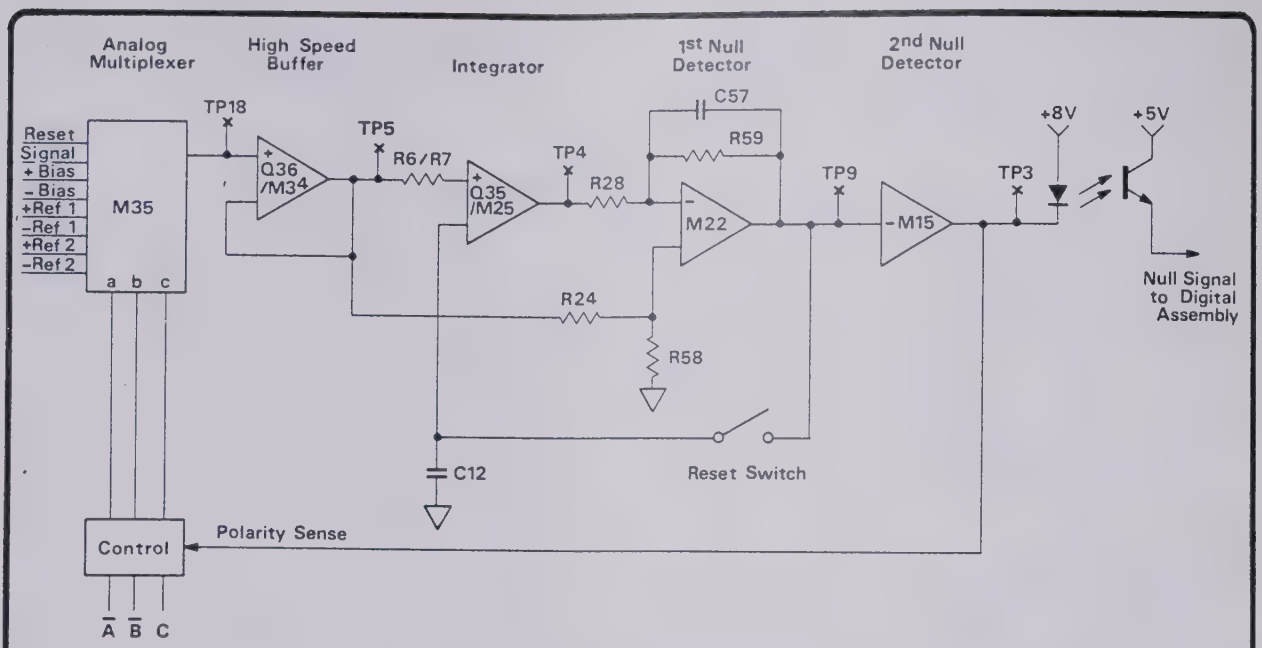



FIG. 3.12 SIMPLIFIED DIAGRAM OF ANALOG SECTION OF A – D CONVERTER

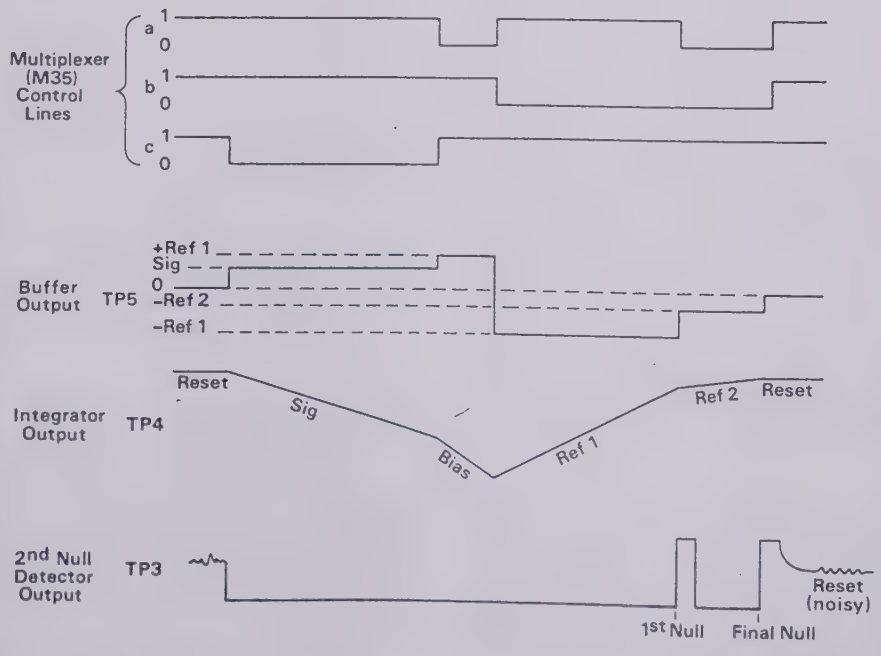



FIG. 3.13 TIMING DIAGRAM FOR ANALOG SECTION OF A – D CONVERTER
(Positive Signal)

### 3.2.3.2 A - D Input Control

The analog signal from the DC Isolator is applied to the analog multiplexer (M35) and fed to the input of the buffer (Q36/M34). This in turn feeds the signal to the integrator comprising of Q35, M25 and C9.

Control of the multiplexer is derived from the Digital assembly via opto-isolators M4, M5 and M6. These signals control the sequence of events, allowing first the signal, then a bias voltage of the same polarity as the signal, followed by opposite polarity reference and reference ÷16 signals to the buffer and integrator. The multiplexer is then placed in a reset condition ready for the next measurement cycle. Fig. 3.14 gives the multiplexer control line sequence for both positive and negative signals.

| STATE | a | b | c | STATE | a | b | c |
|---|---|---|---|---|---|---|---|
| RESET | 1 | 1 | 1 | RESET | 1 | 1 | 1 |
| SIG | 1 | 1 | 0 | SIG | 1 | 1 | 0 |
| + BIAS | 0 | 1 | 1 | –BIAS | 0 | 1 | 0 |
| –REF 1 | 1 | 0 | 1 | +REF 1 | 1 | 0 | 0 |
| –REF 2 | 0 | 0 | 1 | +REF 2 | 0 | 0 | 0 |
| RESET | 1 | 1 | 1 | RESET | 1 | 1 | 1 |
| | Positive signal | | | | Negative signal | | |

Logic levels : (0 ≡ –8V, 1 ≡ +8V)

**Fig 3.14 MULTIPLEXER CONTROL LINE SIGNALS**

### 3.2.3.3 Reference Voltages and Supply

REF 1 : The two halves of M39 in c… diodes D60 and D59 form the positi… ence voltages respectively, D65 a… diodes (see Fig. 3.15). The output… –11 volts) supply the defined cu… zeners via R212 and R38 respect… are selected by Datron so that each ze… temperature coefficient.

The resistor chains R42-R43 a… weighted values allowing the set up … REF 1 voltages, of ±6.42V, by cutti… links.

REF 2 : The second reference is 1/16… positive and negative REF 1 voltages … R68 and R214, R70 respectively.

The power supplies for the logic … M27, M28 and opto-isolators M1, M4, M… derived from M39 via zener diodes D6… supply voltages of ±8 volts.

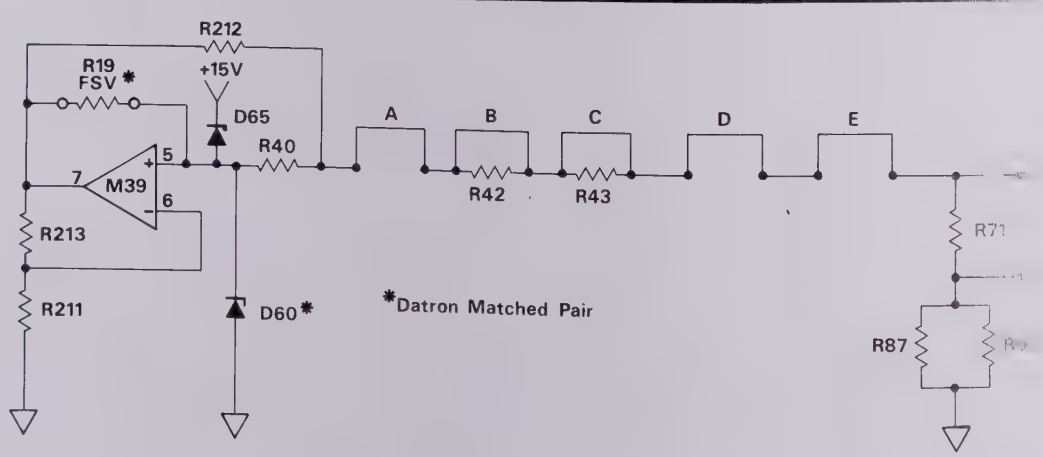



**FIG. 3.15 POSITIVE REFERENCE CIRCUITRY**

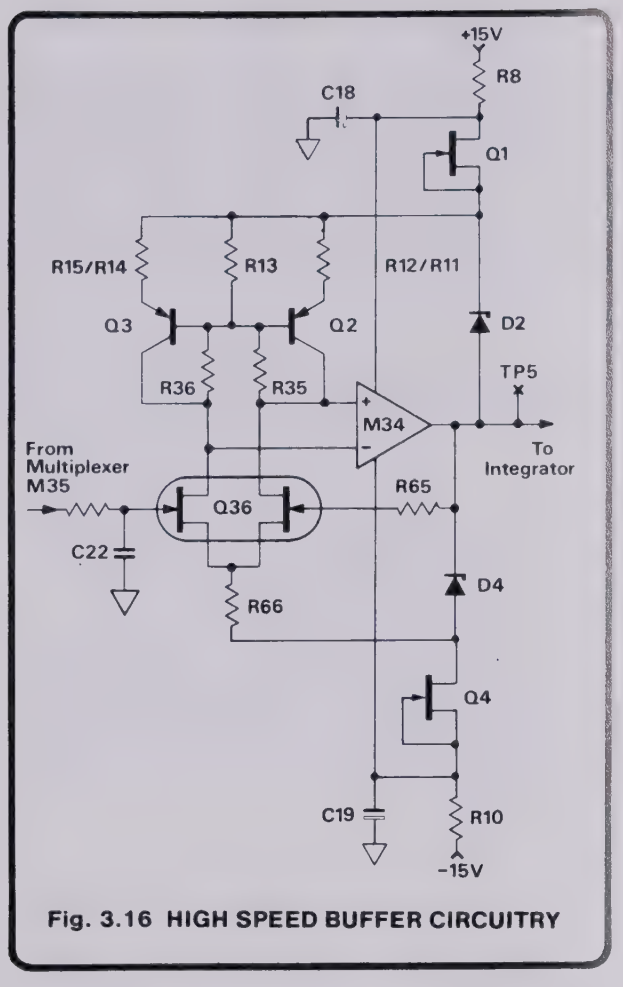



**Fig. 3.16 HIGH SPEED BUFFER CIRCUITRY**

### 3.2.3.4 High Speed Buffer

C22 slows the switching edges from the multiplexer M35 so that the buffer cannot slew-limit and thus lose the charge. The signals are fed to Q36, M34 which comprise a high speed buffer with high common mode rejection ratio (See Fig. 3.16). The common mode rejection is dependent on the power supplies of Q36 (from R66 and R14/R15) being bootstrapped to the output of the buffer, via D2 and TP5. Thus the difference between input signal and power supply around the input stage is maintained constant whatever the input signal.

### 3.2.3.5 Integrator

The basic Integrator comprises R6, R7 and C9, with hybrid amplifier M35 and M25. (See Fig. 3.17). Low-noise FET pair Q35 also has low gate leakage, which maintains the effectiveness of 'sample-and-hold' components R34 and C12.

An inverted and attenuated version of the integrator output voltage is developed across R5. This is applied via R4 and C10 to compensate for the small amount of dielectric absorption in C9. The value of R5 is factory-selected to optimize readings of the same input, taken at differing rates (including 'one-shot' measurements).

C11 and R27 provide shorter term compensation, R23 being set to correct linearity at 10% of full range.

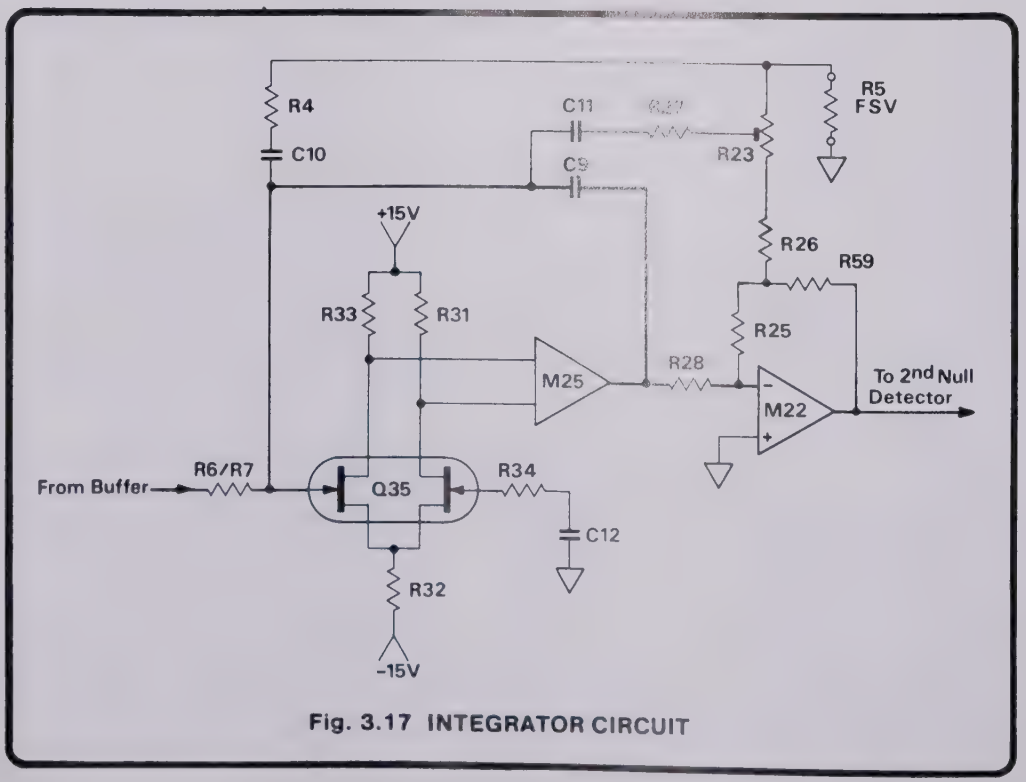



**Fig. 3.17 INTEGRATOR CIRCUIT**

### 3.2.3.6 1st Null Detector

The 1st null detector comprises a low noise amplifier, M22, an inverting configuration, where the dc gain is controlled by the ratio of R59 to R28 for small inputs. For larger inputs from the integrator the clamp diodes, D1 and D3, prevent the amplifier from saturating.

During REF 1 the non-inverting input is offset by approximately 10mV to determine the point at which REF 2 is applied (after counting is synchronised). In REF 2 the offset reduces by a factor of 16 giving the null reference point.

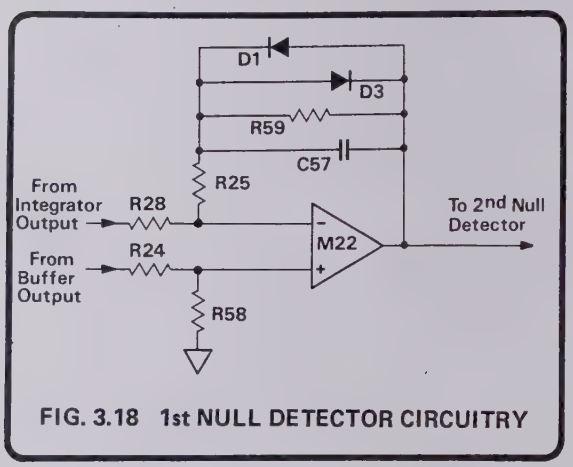



FIG. 3.18 1st NULL DETECTOR CIRCUITRY

### 3.2.3.7 2nd Null Detector

The signal from the 1st null detector is applied to M15 which boosts the voltage gain. The output provides a logic drive signal via opto-isolator M1, signalling the digital circuitry whenever a null condition changes, Fig. 3.19.

When in an averaging mode (Input Zero or CAL Zero selected; or for 1061A only, with 'Input Filter' and DC, AC Option 12, or Ohms selected) the second null detector is offset a small amount in a cycle of 16 steps (See Fig. 3.20). This offset is produced from the digital to analog converter M28, which is enabled by the level-shifted $\overline{AVE}$ signal from M20-5, and clocked from M6, the C control opto-isolator.

### 3.2.3.8 Reset Period

At the end of a measurement cycle or in hold, the circuitry is placed into a reset condition. The control lines of the multiplexer M35 allows the 0 volts reference input, at pin 4, to be connected to its output. (See Fig. 3.21). At the same time the reset line (M27-3) is taken high turning on M26. This reset signal, applied to pins 5 and 12 of M26, allows the output of the 1st null detector to be fed back via R60 to a sample and hold capacitor C12 on the integrator.

Thus, with the input to the A - D converter at zero volts, the charge stored on C12 is the sum of all the offsets from the multiplexer, buffer, integrator and 1st null detector, allowing the 1st null detector to indicate the true zero crossing (null) point.

The reset signal applied to M26 pins 6 and 13 merely allows a lower impedance path between the buffer and the integrator to speed up the settling time as C9 is discharged to zero.

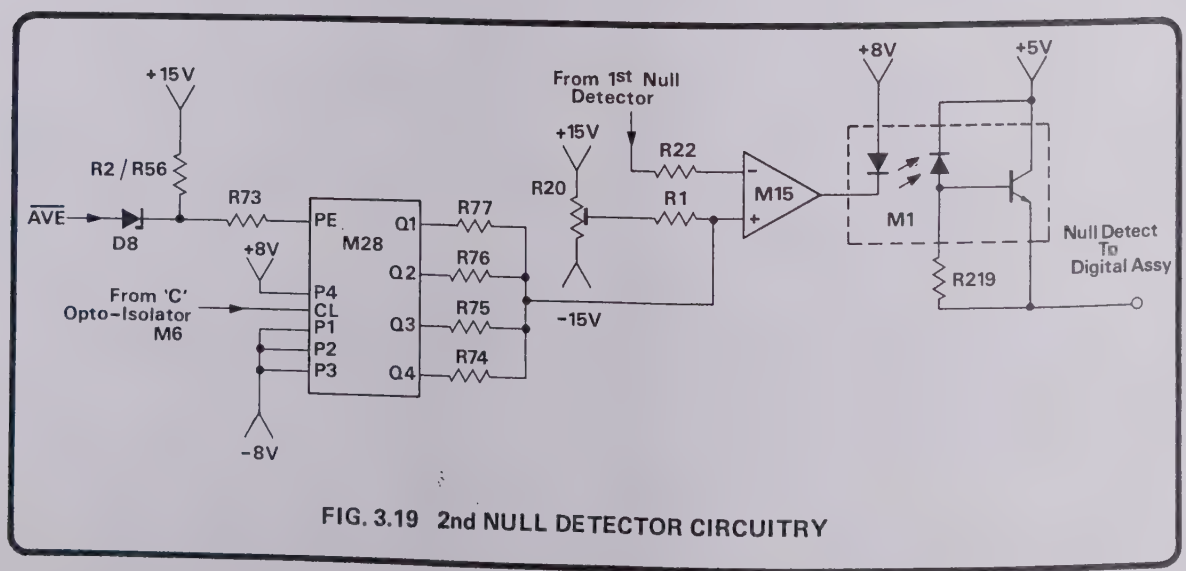



FIG. 3.19 2nd NULL DETECTOR CIRCUITRY

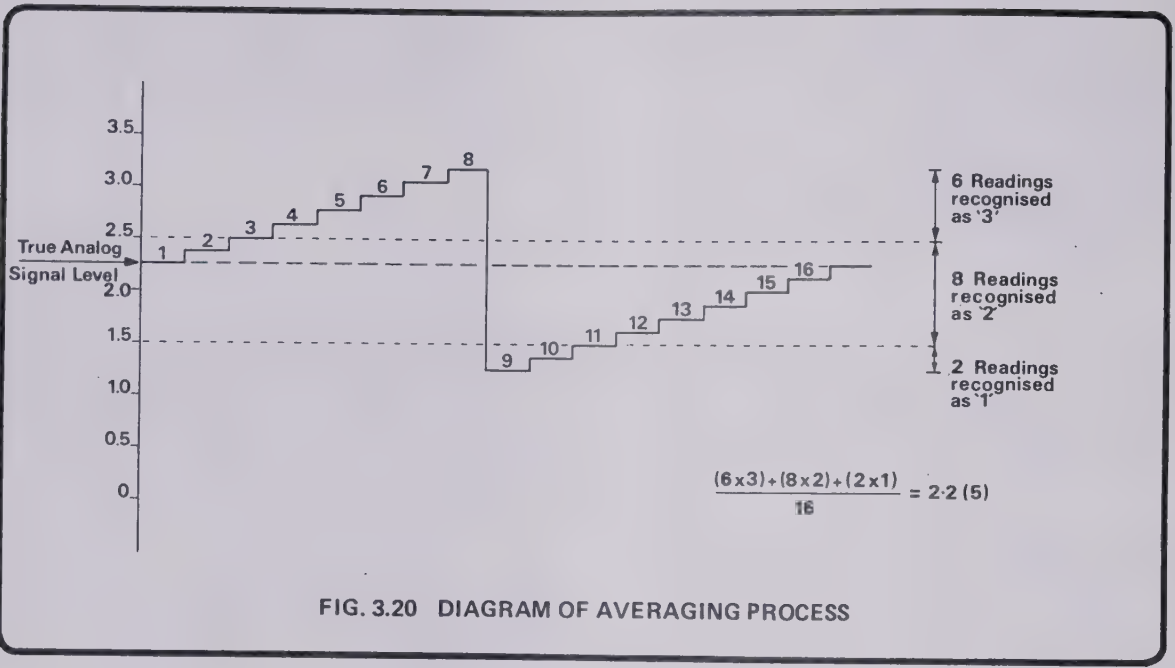



FIG. 3.20 DIAGRAM OF AVERAGING PROCESS

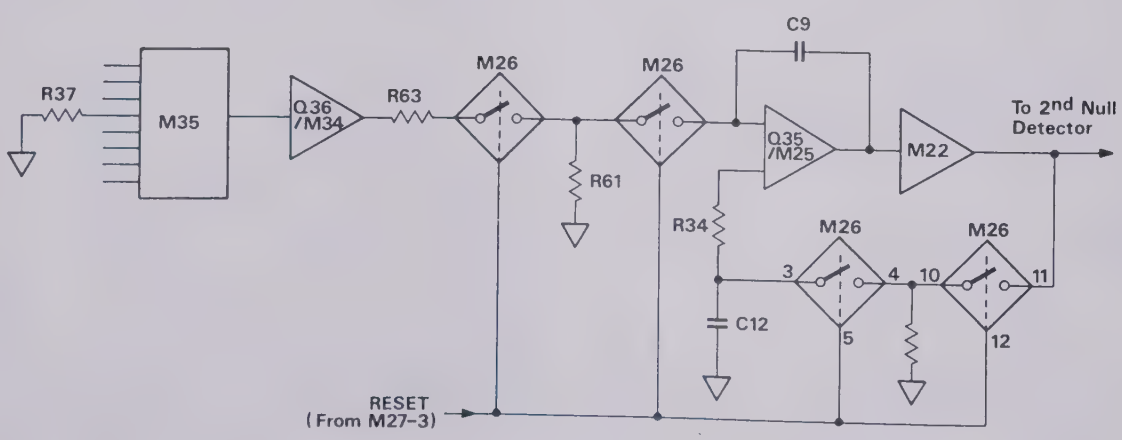



FIG. 3.21 SIMPLIFIED DIAGRAM OF A – D DURING RESET PERIOD

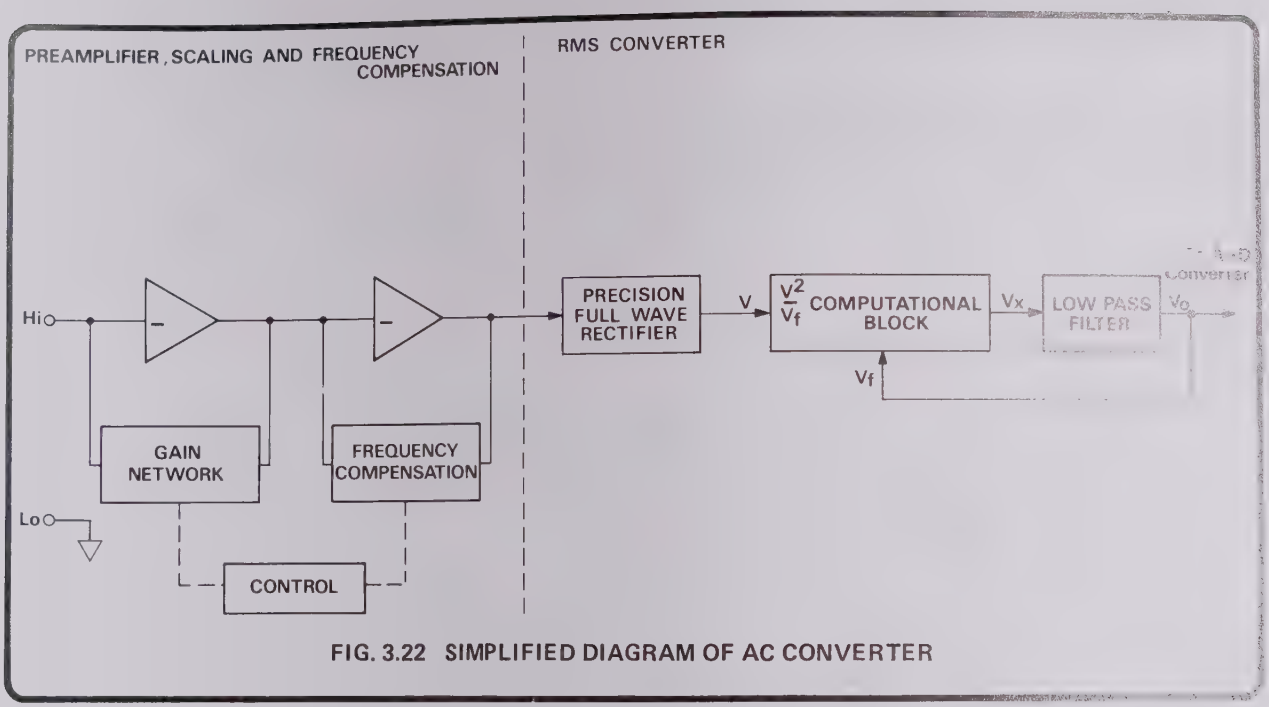



FIG. 3.22 SIMPLIFIED DIAGRAM OF AC CONVERTER

## 3.3 OPTION 10 AC ASSEMBLY (Circuit Drawing No. 430402)

(For OPTION 12 see page A27)

### 3.3.1 General Principles

The preamplifier buffers and ranges the signal in order to present 0.9 volts full range to the AC to DC converter section.

Once converted to an equivalent DC signal, it is applied to the analog to digital converter on the main analog assembly.

The conversion technique is electronic true RMS sensing as shown in the simplified block diagram Fig. 3.22. The Datron RMS module can be best considered as a functional block consisting of circuitry which accepts two inputs, V and $V_f$, computes $V^2/V_f$ and has an output of $V_x$ which is then filtered so that all the AC components are removed. The output of the block is fed back to $V_f$, thus closing the loop around the whole circuitry.

Mathematically: $\overline{V_x} = V_o$

but $V_x = V^2/V_f$

$\overline{V^2}/V_f = V_o$, but $V_o = V_f$

$\overline{V^2} = V_o^2$

i.e. $V_o = \sqrt{\overline{V^2}}$

### 3.3.2 Preamplifier and Scaling (430402 sheet)

Relay RL2 is energised on selection of AC (430402), connecting the Hi terminal to the input of the AC assembly. If DC and AC are selected together, the AC assembly becomes DC coupled by energising RL3, CR2 the AC coupling capacitor, to be by-passed.

The signal is then fed to the switched gain preamplifier whose full range output is 0.9 volts r.m.s. A simplified diagram of this arrangement is shown in Fig. 3.23. The frequency response is held flat within ±1% by controlling the gain defining component time constants to a similar order of accuracy. Residual errors are removed by the frequency compensation stage. (See section 3.3.4)

The preamplifier has a stable DC path provided by a dual transistor pair Q33 and a fast AC path by dual F.E.T.'s Q32 and Q34. Further gain is provided by the following long-tail pair cascade of Q20, Q21, Q22 and Q23, which is loaded by a current mirror, Q24, Q15 and Q16 with bias components Q17 and Q18 form a conventional class AB output stage. R121 compensates for the bias current of Q33, whileR112 trims the offset voltage to zero.

The unity gain frequency compensation amplifier consists of a stable DC path, provide by M11, and a fast AC path provided by Q25 to Q29. The bootstrap circuit of Q19 presents the varicap diode, D11, with a high impedance, thus ensuring that the varicap is not shunted to ground.

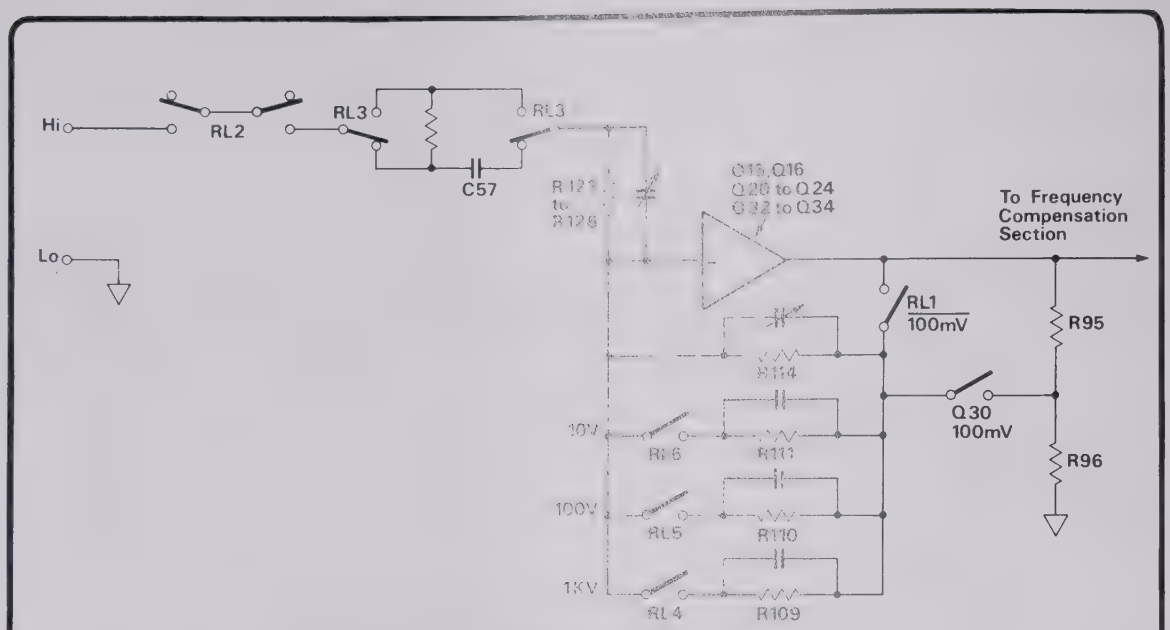



FIG. 3.23 SIMPLIFIED DIAGRAM OF THE AC PREAMPLIFIER SCALING

### 3.3.3 RMS Converter (430402 sheet 2)

The RMS converter takes the scaled AC signal from the preamplifier and converts it to an equivalent DC signal suitable for Analog-to-Digital conversion. The conversion technique is electronic true RMS sensing as shown in the simplified block diagram Fig. 3.25.

M8 and M9 form a summing type, full wave rectifier. The output of M8, a precision half-wave rectifier inverter, is summed with the non-inverted signal with a weighting of 2 : 1 at the input of M9. This forces a full-wave rectified current to flow in RMS module M6. Potentiometer R50 balances the rectifier to provide the same output for non-inverted or inverted asymmetric waveforms.

The output current from the RMS module passes into filter-buffer M1 and is converted to a nominal 5 volts for a full range signal. Q1 and Q2 switch in additional capacitors when FILTER is selected, to operate down to 45Hz. M2 is a voltage to current converter providing a feedback current to the RMS module proportional to the output voltage. R90 is the zero adjustment for the half wave rectifier M8 and R35 is the high crest factor gain adjustment. R75 is adjusted for optimum linearity.

The output of M1 (TP2) is fed to a resistor chain R1 - R7, to provide an output of 3.14 volts by the selection of resistors R2 - R5. Q3 is turned on when AC is selected and switches the output of the AC converter into the Analog-to-Digital Converter (Drawing No. 430328 sheets 3 and 4).

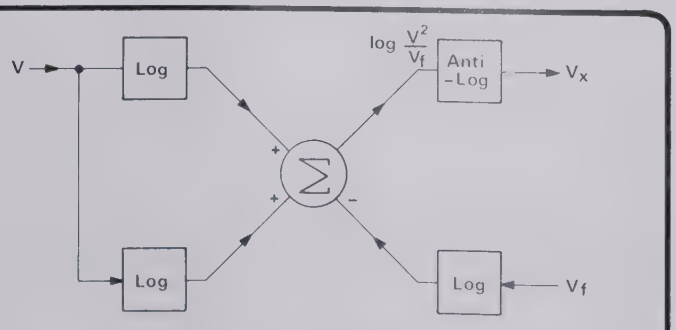



FIG. 3.25 BLOCK DIAGRAM OF RMS CONVERSION TECHNIQUE

### 3.3.4 High Frequency Compensation

During the calibration cycle, the microprocessor notes and stores the high frequency (HF) error of each range. When AC volts is selected the compensation information for a particular range is recalled by the microprocessor, transferred across the isolation barrier and latched on to M13, M14 (Drawing No. 430328 sheet 5), see Fig. 3.26. As in the case of the Input Current Compensation (section 3.2.2.5), the output from the latches is applied to a digital-to-analog converter, AN2. The voltage produced is fed to the AC converter via com… applied to varicap D11. The varicap i… the amplifier chain a flat frequency re…

The calibration is carried out … but since it flattens the AC amplifier … tion is valid for all specified frequenc… that the calibration routine is iterati… is non-linear.

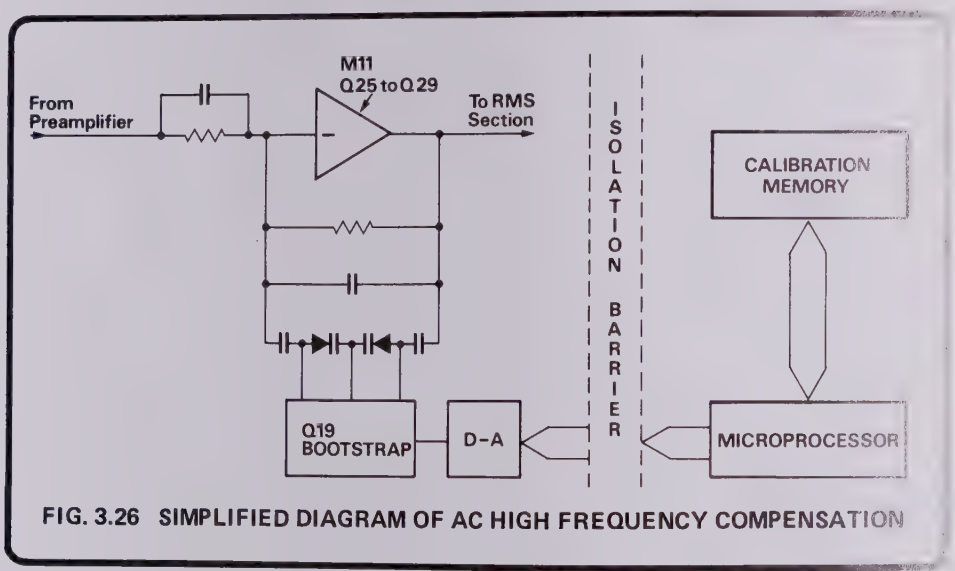



FIG. 3.26 SIMPLIFIED DIAGRAM OF AC HIGH FREQUENCY COMPENSATION

### 3.3.5 Frequency Detection (430402 sheet 2)

The signal frequency is monitored by M10 which is set so that a signal frequency greater than 5kHz causes a logic '1', (0 volts) on M10 - 4. This signal indicates to the Digital Board via M18, M2 (Drawing No. 430328 sheet 5) which one of the two sets of specifications should be used for calculating the measurement uncertainty when the Spec key is depressed.

### 3.3.6 Test

During the self-test routine (actu… panel or remotely programmed) the … checked for correct operation. The circ… the .1V range as described in Sectio… selected and F.E.T. Q31 is 'closed' fro… a signal of 0.08 volts DC to be injected i… fier. Thus a signal of approximately 3 … from the RMS section and applied to t… situated on the Analog assembly. This s… ured and compared with a stored value. … signal is within ±6% of the stored value, … with a 1V range check.

| Range | Output f… |
|---|---|
| .1 | |
| 1 | |

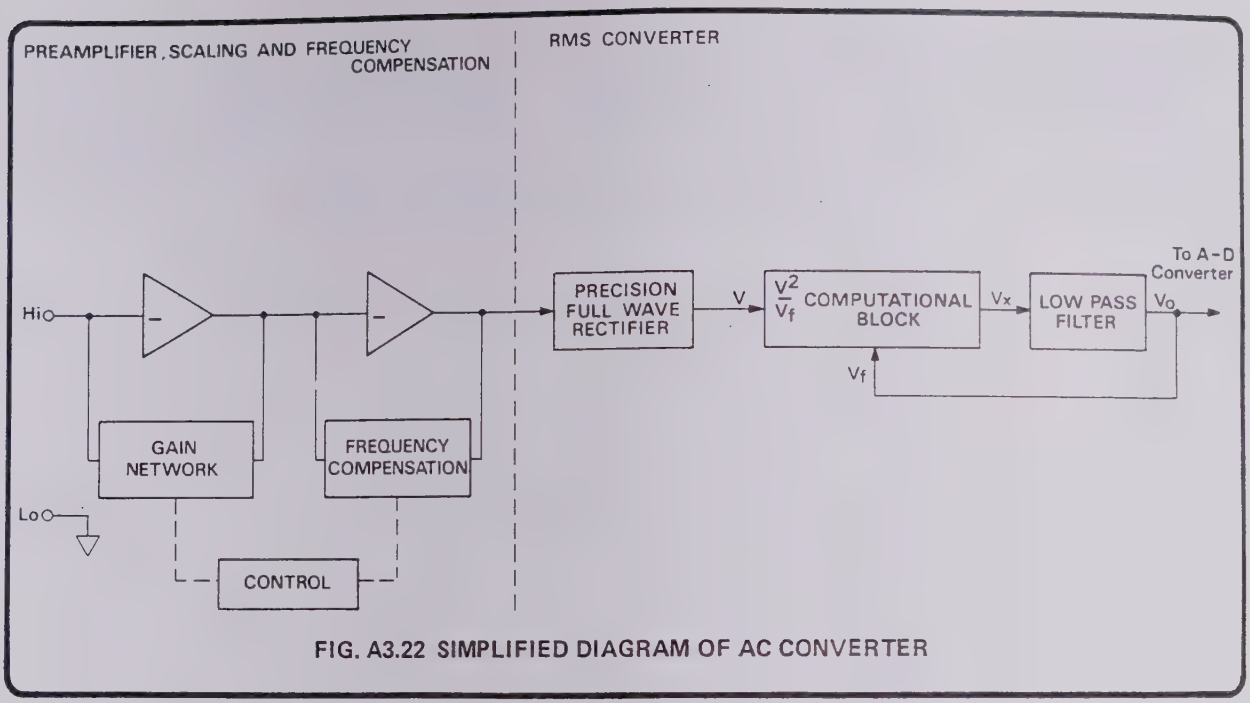



FIG. A3.22 SIMPLIFIED DIAGRAM OF AC CONVERTER

## A3.3 OPTION 12 AC ASSEMBLY
**(Circuit Drawing No. 430552)**

(For OPTION 10 see page 27)

### A3.3.1 General Principles

The preamplifier buffers and ranges the signal in order to present 0.9 volts full range to the AC to DC converter section.

Once converted to an equivalent DC signal, it is applied to the analog to digital converter on the main analog assembly.

The conversion technique is electronic true RMS sensing as shown in the simplified block diagram Fig. A3.22. The Datron RMS module can be best considered as functional block consisting of circuitry which accepts two inputs, V and $V_f$, computes $V^2/V_f$ and has an output of $V_x$ which is then filtered so that all the AC components are removed. The output of the block is fed back to $V_f$, thus closing the loop around the whole circuitry.

Mathematically: $\overline{V_x} = V_o$

but $V_x = V^2/V_f$

$\overline{V^2}/V_f = V_o$, but $V_o = V_f$

$\overline{V^2} = V_o^2$

i.e. $V_o = \sqrt{\overline{V^2}}$

### A3.3.2 Preamplifier and Scaling (430552 sheets 1 & 2)

When the AC option is selected, the AC preamplifier is connected in parallel with the 1000 Volt range of the DC isolator. The resultant impedance presented at the input terminals is a resistance of 1MΩ, shunted by 150pF.

Relay RL2 is energized on selection of AC, directly connecting the Hi terminal to the input of the AC assembly. If DC and AC are selected together, the AC assembly becomes DC coupled by energizing RL3, causing C77, the AC coupling capacitor, to be by-passed.

The signal is then fed to the switched gain inverting preamplifier whose full range output is 0.9 volts r.m.s. A simplified diagram of this arrangement is shown in Fig. A3.23. The frequency response is held flat, to within ±1%, by controlling the gain defining component time constants, to a similar order of accuracy. Residual errors are removed by the frequency compensation stage. (See section 3.3.4).

The main amplifier M22 responds to signals from DC to above 1MHz. Its input buffer Q36 reduces bias current errors. A chopper-stabilized amplifier M21 nulls the offset of Q36. Filter components R123 and C90 eliminate the effects of current 'kickback' from M21 to the main signal path. M22 output (Test link TLK) is fed directly to the unity gain frequency compensation stage.

C88 and C89 decouple R160 and R162 except on the 100mV range, when Q33 and Q34 are switched off to provide greater open loop gain. To ensure stability at the higher feedback levels required for the 10V, 100V, and 1000V ranges; C73 is switched in by Q32 to decouple M22 non-inverting input, further reducing the open loop gain.

The unity gain frequency-compensation amplifier includes a stable DC path M20, and a fast AC path Q28 and Q29. The capacitance of varicap diode D14 is determined by the bias voltage at J1-11. The bootstrap circuit of Q17/Q21 ensures that both halves of the varicap are subjected to the same AC signal, removing the non-linearity of the voltage-capacitance characteristic.

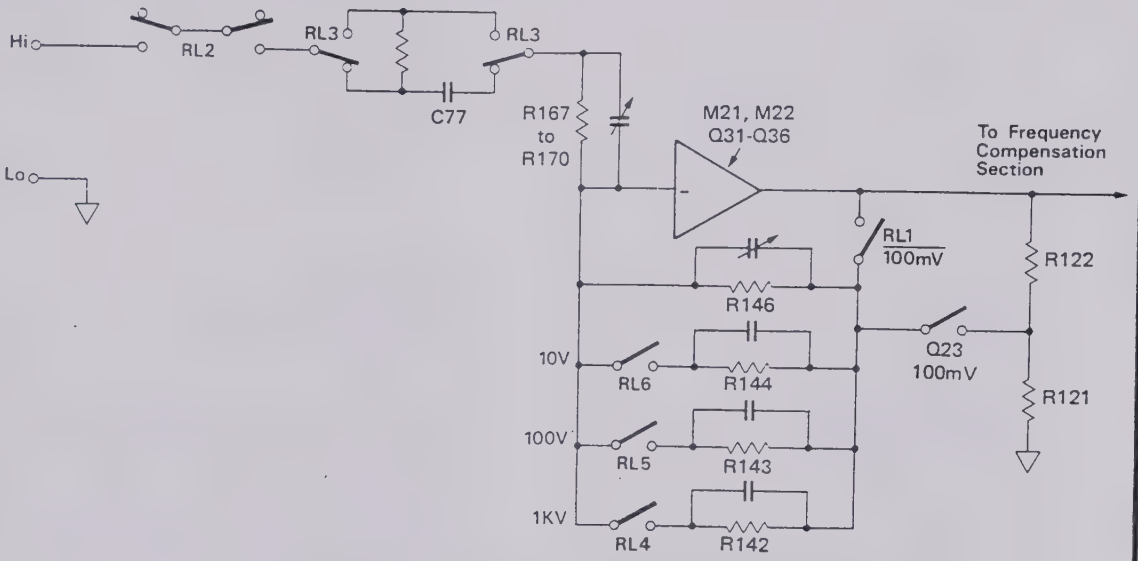



Fig. A3.23 SIMPLIFIED DIAGRAM OF THE AC PREAMPLIFIER SCALING

### A3.3.3 RMS Converter (430552 Sheets 2 & 3)

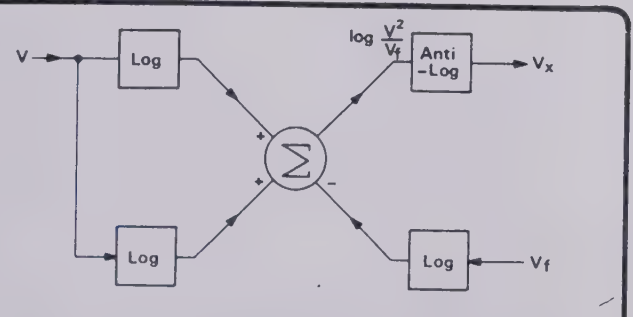



Fig. A3.25 BLOCK DIAGRAM OF RMS CONVERSION TECHNIQUE

The RMS converter takes the scaled AC signal and converts it to an equivalent DC signal suitable for Analog-to-Digital conversion. The technique used is Electronic True RMS Sensing as shown in the simplified block diagram Fig. A3.25.

M13 and M14 form a summing full-wave rectifier. The output of precision half-wave rectifier M13 is summed with the non-inverted signal at the input of M14, with a weighting of 2:1. This forces an accurately rectified full-wave current to flow in RMS module M11. Potentiometer R62 adjusts the rectifier symmetry to provide the same output for signals of either polarity.

The output current from the RMS module drives the low pass current-to-voltage converter M10/M13, which generates a nominal 0.5 Volts for a full range signal. (Note that M10, M9 and M4 are chopper-stabilized amplifiers to handle the low signal voltages).

M16 is the active element of a switched 3-pole Bessel filter. M15 and M17 switch the time constants, extending the overall low frequency response down to 10Hz (See Fig. A3.24), when 'Filter' is selected.

The high impedance output from the 3-pole filter is buffered by M9/M2, and the other half of M2 provides a bootstrap for M9 input. D26 and D16 prevent the voltage on TL A from exceeding the +5V power rail, providing overload protection.

The buffer output voltage (3.12V full range) is developed across R52-R56 and R70, referred to Output Common at M4 input. Log-feedback stage M4/M3 closes the 'Square-Root' loop, providing feedback current for the RMS computation in M11.

When the AC, or DC-coupled AC [illegible], Q3 connects the buffer output to the Analog-to-Digital converter. Test links TLC, D, E and F are selectively removed at manufacture to set the correct [illegible].

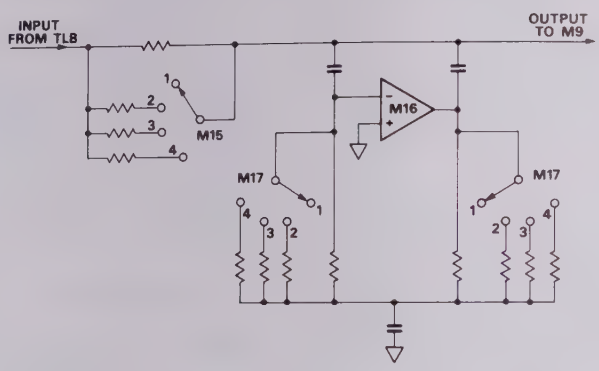



**Fig. A3.24 SIMPLIFIED DIAGRAM OF AC FILTERS**

### A3.3.4 High Frequency Compensation

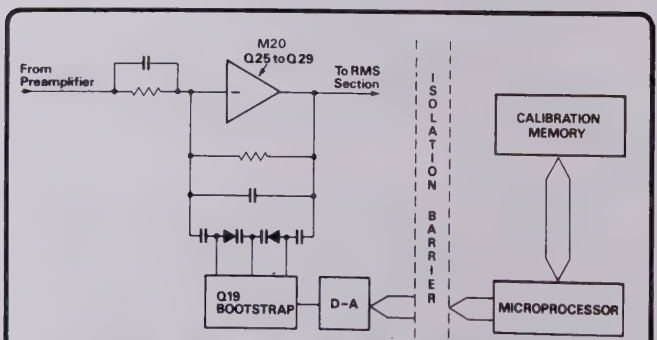



**Fig. A3.26 SIMPLIFIED DIAGRAM OF AC HIGH FREQUENCY COMPENSATION**

During the calibration cycle, the microprocessor notes and stores the high frequency (HF) error of each range. When AC volts is selected the compensation information for a particular range is recalled by the microprocessor, transferred across the isolation barrier and latched on to M13, M14 (Drawing No. 430328 sheet 5), see Fig. 3.26.

The output from the latches is applied to a digital-to-analog converter, AN2. The voltage produced is fed to the AC converter via connector J1 pin 11 and applied to varicap D14. The varicap is thus adjusted to give the amplifier chain a flat frequency response.

The calibration is carried out at [illegible] but since it flattens the AC amplifier respo[illegible] is valid for all specified frequencies. [illegible] that the calibration routine is iterativ[illegible] is non-linear.

### A3.3.5 Frequency Detection (430552 sh[illegible]

The signal frequency is monitored [illegible] set so that a signal frequency greater t[illegible] logic '1', (0 volts) on M19-4. This sign[illegible] Digital Board via M18, M2 (Drawing N[illegible] which one of the two sets of specifi[illegible] used for calculating the measurement [illegible] the Spec key is depressed.

### A3.3.6 Test

During the self-test routine (actuate[illegible] panel or remotely programmed) the AC as[illegible] for correct operation. The circuitry is [illegible] .1V range as described in Section 3.2.1[illegible] 'closed' from M7-13 causing a signal of 0 [illegible] injected into the preamplifier. Thus a signal of [illegible] 3.14 volts is output from the RMS section and applied to the A - D converter situated on the Analog [illegible] This signal is then measured and compared with a [illegible] value. If the measured signal is within ±6% of the [illegible] value, the test continues with a 1V range check.

| Range | Output from RMS section |
|---|---|
| .1 | +3.14 volts |
| 1 | +0.314 volts |

## 3.4 OHMS ASSEMBLY (Circuit Drawing No. 430331)

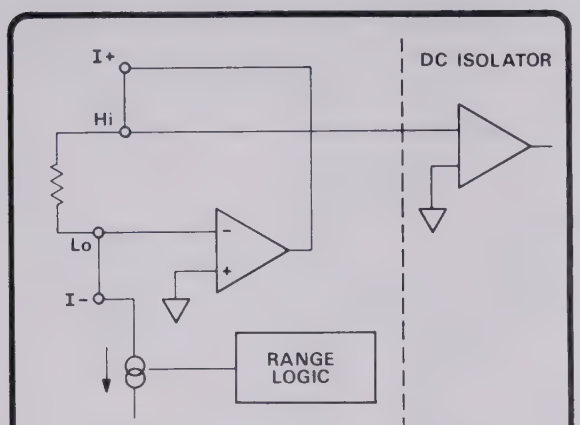



FIG. 3.27 SIMPLIFIED RESISTANCE CONVERTER

The instrument functions by measuring the voltage across an unknown resistance with a known constant current flowing in it. The converter can be split into two parts: a low drift voltage follower and a constant current source covering 6 decades from 100nA to 10mA (see Fig. 3.27).

It should be noted that when the Ohms assembly is fitted the DC Isolator Lo is no longer directly connnected to the front/rear panel Lo terminal, but goes via RL1 on the Ohms assembly (connector link removed on side panel). Lo becomes an active terminal in resistance measurements.

### 3.4.1 Low Drift Voltage Follower

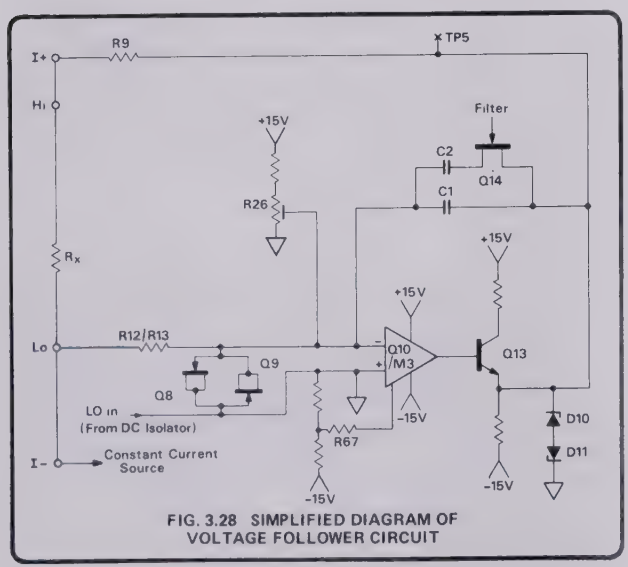



FIG. 3.28 SIMPLIFIED DIAGRAM OF VOLTAGE FOLLOWER CIRCUIT

When OHMS is selected, the front panel Lo terminal is connected to the –ve input of amplifier Q10/M3, the +ve input being referred to DC isolator Lo (this remains reference common). Q10/M3 together with output follower Q13, will thus apply a voltage at the I+ terminal via RL1 such that the voltage at front panel Lo is at reference common plus any offset due to Q10/M3. This voltage offset drift is kept small for changes of temperature by compensating the input bias current of Q10 with the current in R67, which changes with temperature due to the voltage drift at Q10 emitters. Q10 input bias current is initially nulled by R26.

Thus if we consider 2-wire measurement, I+ is linked to Hi, I– is linked to Lo and the unknown resistance linked between Hi and Lo, with a constant current flowing from I+/Hi, through the unknown resistance ($R_X$) to Lo/I–. The Lo terminal is maintained at 0V. Therefore the Hi terminal (DC Isolator Input) is at $I_{constant} \times R_X$ volts above Lo. As long as the error is small referred to reference 0, the DVM will read the correct resistance.

Input protection is provided as follows:–

Voltage/Current applied to input terminals:

| | |
|---|---|
| I+ | R9, D10, D11 |
| I– | R2, D1, D2, Q25, R23 |
| Lo | R12, R13, Q8, Q9 |

Open circuit voltage limit protection:

| | |
|---|---|
| I+ | R15, R16, Q6, Q7 |
| I– | R6, D7, D8, Q2, Q22 |

### 3.4.2 Constant Current Source

Seven decades of ohms ranges are provided by 6 ranges of current and 2 ranges of DC Isolator voltage gain (100mV range for 10Ω, 1V range otherwise). See Fig. 3.29.

When kΩ's is selected, Q17 (sheet 2) is turned on enabling astable M6 to produce a 200Hz signal to switch M5. Thus when gates B and C of M5 are open, C9 is charged up from the negative reference (originating from the analog section of the A - D converter). These gates then close and A and D open, sharing the charge with C8, the voltage across C8 equals the reference voltage (sheet 1).

| Range | Current | F.E.T.'s/Switches turned on | |
|---|---|---|---|
| | | Current Selector | Leakage path |
| 10Ω | 10mA | Q11, M2(A) | |
| 100Ω | 10mA | Q11, M2(A) | |
| 1kΩ | 1mA | M1(A) | |
| 10kΩ | 100μA | M1(B) | |
| 100kΩ | 10μA | Q4 | M2(B) |
| 1MΩ | 1μA | Q1, M1(D) | Q3, M2(C) |
| 10MΩ | 100nA | Q1, M1(C) | Q3, M2(C) |

FIG. 3.29 OHMS CURRENT RANGE SWITCHING

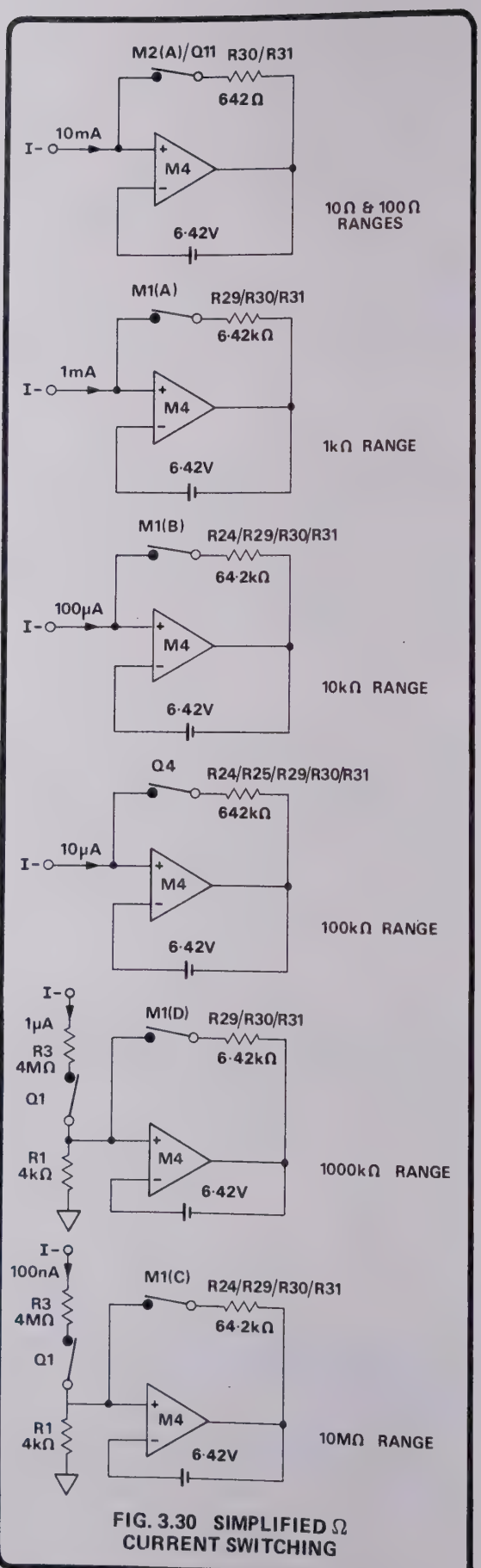



FIG. 3.30 SIMPLIFIED Ω CURRENT SWITCHING

The voltage developed across C8 [illegible] current through resistor chain R24, R25, [illegible] the voltage developed across the chain [illegible] C8. Thus the current required for a [illegible] by the value of the resistor chain [illegible] Q4. Simplified diagram Fig. 3.30 [illegible] and switching for each range. On the [illegible] leakage paths are provided by [illegible]

To produce good common [illegible] supplies are bootstrapped, the supply [illegible] a 12 volt zener, D17. The filtered [illegible] (+ΩBS and −ΩBS) power the astable [illegible] switch.

The use of ohms guard permits in-[illegible] of resistors, provided shunt paths are [illegible] and a suitable tapping point is available. [illegible] Guard is reference 0, Lo is actively [illegible] microvolts of reference 0 (as previously [illegible] there is no voltage across Rz and [illegible] in Rz. Voltage follower Q10/M3 [illegible] current into Ry from the I+ termina[illegible] current for the particular range flows th[illegible]

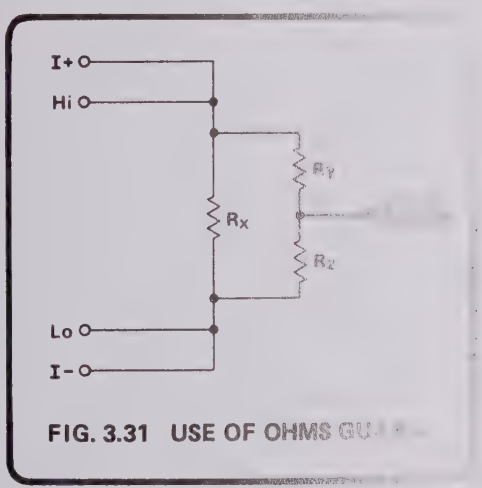



FIG. 3.31 USE OF OHMS GU[illegible]

### 3.4.3 Test

During the self-test routine (actuat[illegible] panel or remotely programmed), the [illegible] checked for correct operation. The circ[illegible] the 10kΩ range as described in Sectio[illegible] selected and F.E.T. Q5 'closed' from [illegible] (9.76kΩ) to be placed between I+ and I- [illegible] and Hi, I− and Lo connected (2-wire [illegible] selected), the DC Isolator (which is also [illegible] measures the voltage developed across the r[illegible] 1 volt). The resulting voltage output from t[illegible] is applied to the A-D converter, measured [illegible] to the stored value. If the measured signal [illegible] of the stored value, the test is complete.

## 3.5 CURRENT ASSEMBLY (Drawing No. [illegible])

The Current assembly contains a set of [illegible] precision current shunts, the voltage developed across the shunt(s) being sampled by the DC or AC voltage measurement circuits.

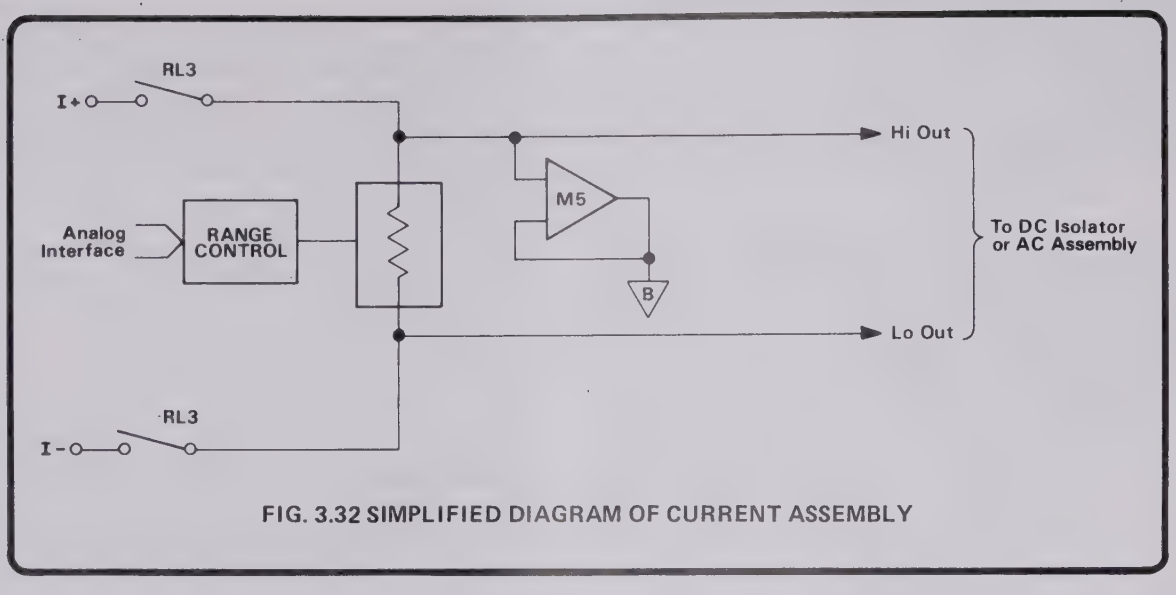



FIG. 3.32 SIMPLIFIED DIAGRAM OF CURRENT ASSEMBLY

### 3.5.1 Current Measurements

Precision current shunts of 0.1Ω, 1Ω, 9Ω, 90Ω and 900Ω connected in series provide an output of 100mV for a full range signal. To eliminate errors in measurement due to lead or contact resistance, all current shunts are 4-wire sensed i.e. a pair of current leads and a pair of voltage leads to the shunt(s) switched separately. The voltage developed across the shunt(s) is fed to the DC Isolator in DCI and the AC assembly in ACI or DCI + ACI. The latter, DC coupled mode, computing the RMS value of the DC and AC component of the input current. These circuits are placed in the '.1V range' amplifying the signal by 3.16. The output of buffer M5 is used to guard leakage paths on the current board.

Overload protection up to 2 amps is provided by diodes D13 – D16. An input greater than 2 amps causes the current fuse, located on the rear panel, to blow.

### 3.5.2 Test

During the self test routine, the Current assembly is checked for correct operation. The circuitry is placed into the .1mA DC current range as described in Section 3.2.1.3 with the DC Isolator in the 100mV range. Filter is selected and F.E.T. Q9 closed from M4 – 10 allowing current to flow through R18 to the 100μA range shunts, from the +15V supply. Thus a voltage of approximately 0.3 volts is developed across the shunts and fed to the DC Isolator. This voltage combined with the effect of the voltage injected due to the DC Isolator being in Test (Section 3.2.2.6) causes the output of the DC Isolator to be approximately 5.75 volts. After measurement by the A-D converter, the value is compared to the stored value. If the measured signal is within 6% of the stored value, the test is complete.

## 3.6 REAR INPUT/RATIO INPUT (Circuit Drawing No. 430307).

### 3.6.1 General

The Rear Input/Ratio Input assembly contains the switching circuitry to enable one of the three analog signal sources to be connected to the measurement circuits of the DVM. When Rear Input is selected either remotely or on the rear panel of the instrument and the RATIO key is depressed, the switching circuitry, under microprocessor control, selects the ratio (reference) input then the rear (signal) input, taking one valid reading at each stage.

### 3.6.2 Front Panel/Rear Panel Input

When Front Input is selected, either remotely or on the rear panel, this causes the base of Q1 to be connected to 0 volts, turning on the transistor. Thus relays RL1 and RL2 are energised, causing the front signal input terminals to be connected to the measurement circuits. Should Rear Input be selected, relays RL1 and RL2 are de-energised, connecting the rear input to the measurement circuits.

### 3.6.3 Ratio

During the last part of the analog interface update sequence (see Fig. 3.6) M1-5 is taken high causing the flip-flop (M1) to be clocked high (0 volts) on pin 1. The signal is applied to Q2 energising the ratio mode input selector relays, RL3 and RL4. Thus the inputs to the 'Ratio Input' on the rear panel are connected to the measurement circuits. Once a valid reading has taken place, the 'Rear Input' lines are connected to the measurement circuits by leaving M1-5 low. This de-energises the relays as Q2 is turned off. Another reading is then taken and the ratio calculated.

### 3.6.4 Test

When TEST is selected, the ratio option is checked to see if it is fitted, by interrogating the AD4 line to see if it is held high.

## 3.7 ANALOG OUTPUT (Circuit Drawing No. 430308)

### 3.7.1 General

The Analog Output Board accepts the DC Isolator or AC Converter Output and converts it to a ±1 volt DC full range output. This signal can then be used, for example, to drive X-Y plotters or strip chart recorders.

### 3.7.2 Description

The 3.16V full range signal from the DC Isolator or AC Converter is buffered by unity gain amplifier M2. The output is potentially divided by R7 and R8 so that 1 volt full range is presented to M1, another unity gain amplifier. Potentiometer R5 is adjusted to remove any offset caused by M1 and M2. Positive temperature coefficient thermistors R3, R4 and diodes D1, D2, protect the Analog Output circuitry from accidental input applied to the Analog Output external connector.

## 3.8 DIGITAL ASSEMBLY (Circuit Drawing No. 430329)

The Digital assembly contains the circuitry providing the general management of the instrument and the digital section of the A-D converter. Fig. 3.33 outlines the main portions and signal highways of this board.

### 3.8.1 Processor and Memory

A 6800 microprocessor with 16k bytes of memory controls the communication between the front panel, digital interface, display drive, digital and analog assemblies. The memory can be used to five main areas:—

(1) Program Memory - needed to operate the

(2) Constant Data Memory

(3) Non-volatile Calibration Memory

(4) Operating Memory

(5) Volatile Display Memory

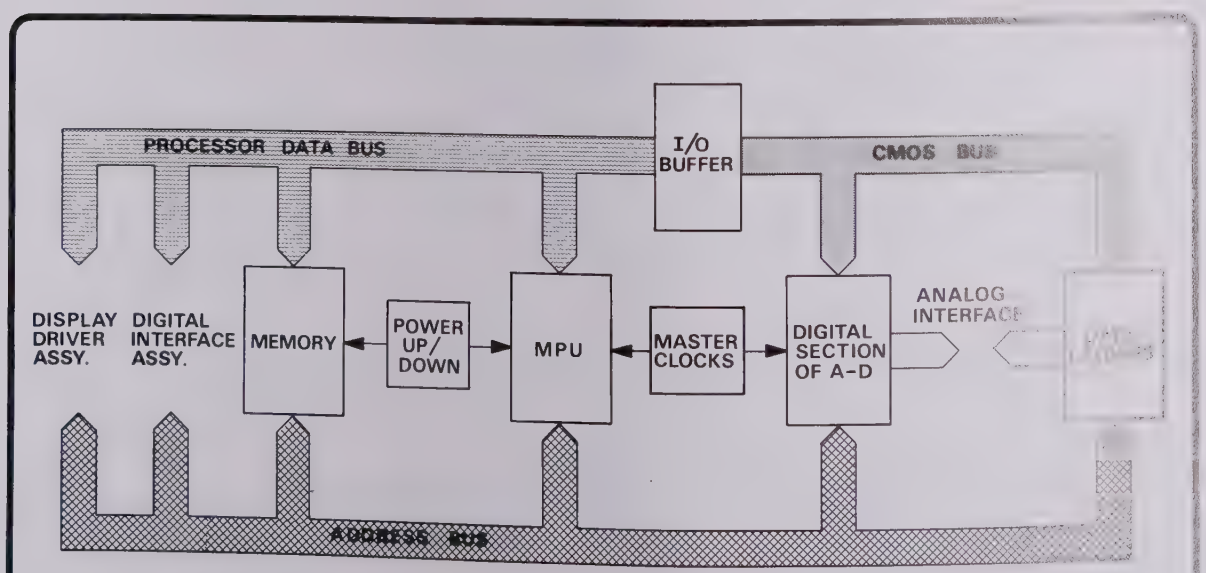



FIG. 3.33 SIMPLIFIED BLOCK DIAGRAM OF DIGITAL ASSEMBLY

### 3.8.1.1 Software Overview

The system uses the technique of a looping prioritised job scheduler (see Fig. 3.34). Each job driven from the scheduler is controlled by a flag in the system workspace which is set when the job is required to be run and cleared when completed. Priority of activation is ensured by making each job exit on completion, to the top of the schedule.

**Program Modules:** The program memory is split into a series of functional modules, each module corresponding fairly closely to a major functional area and hence to one of the jobs activated by the job scheduler, the larger ones being sub-divided, see Drawing No. 890043.

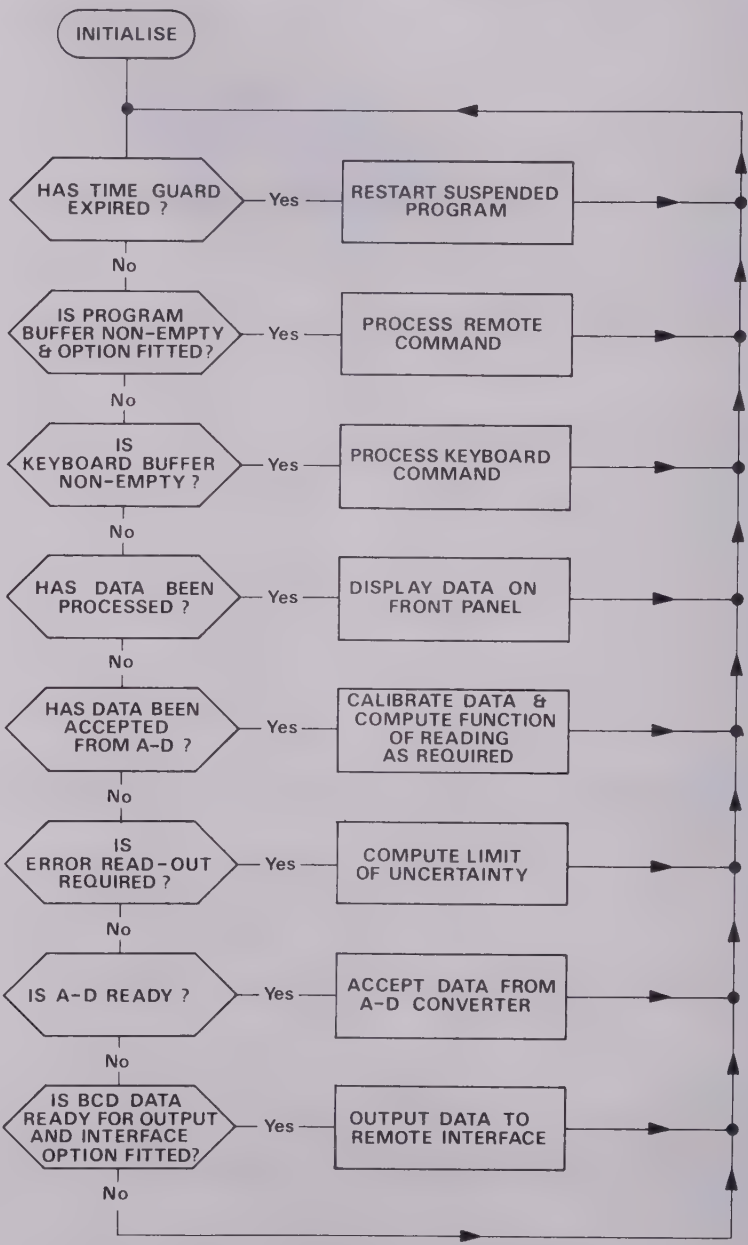
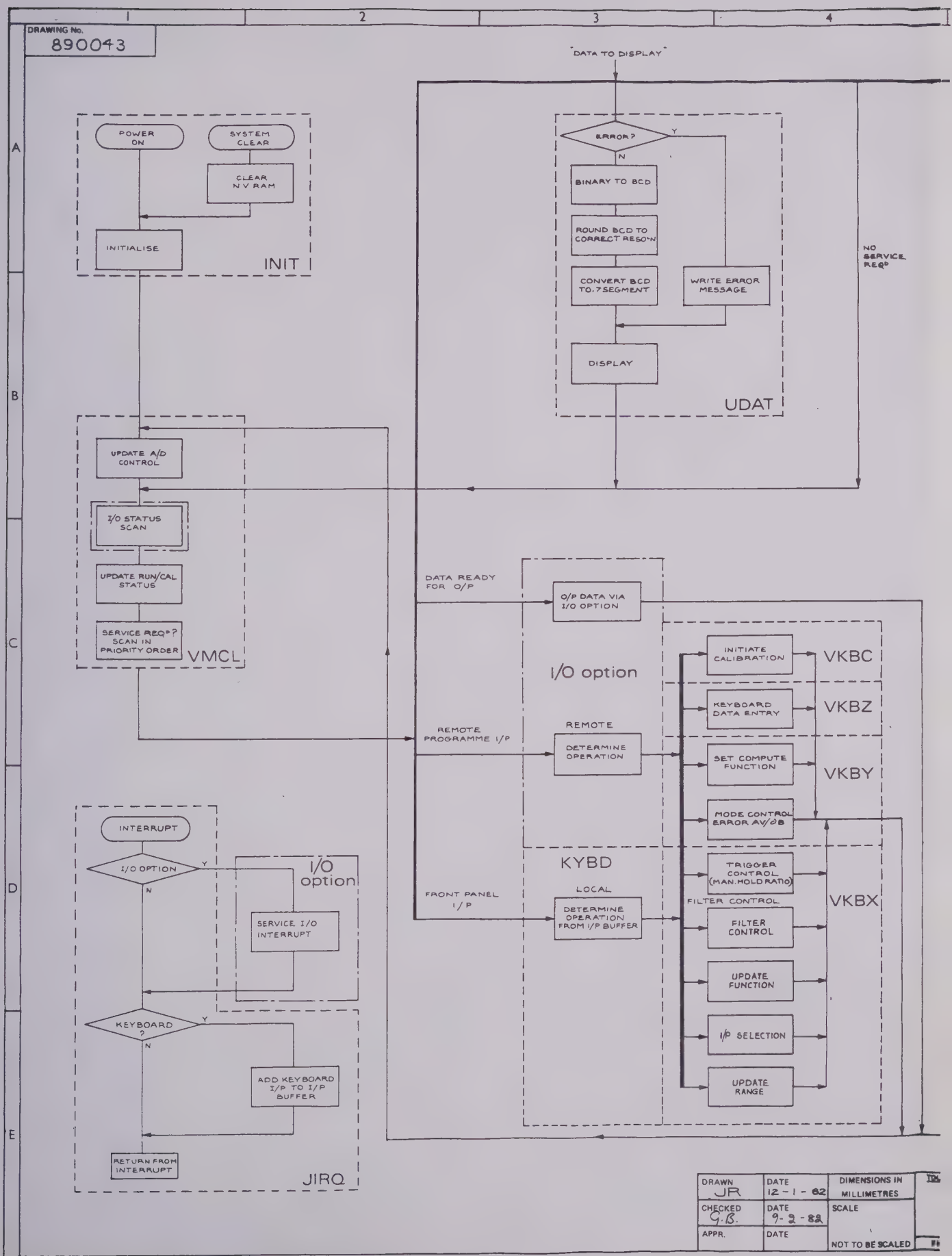



FIG. 3.34 JOB SCHEDULER

DRAWING No. 890043

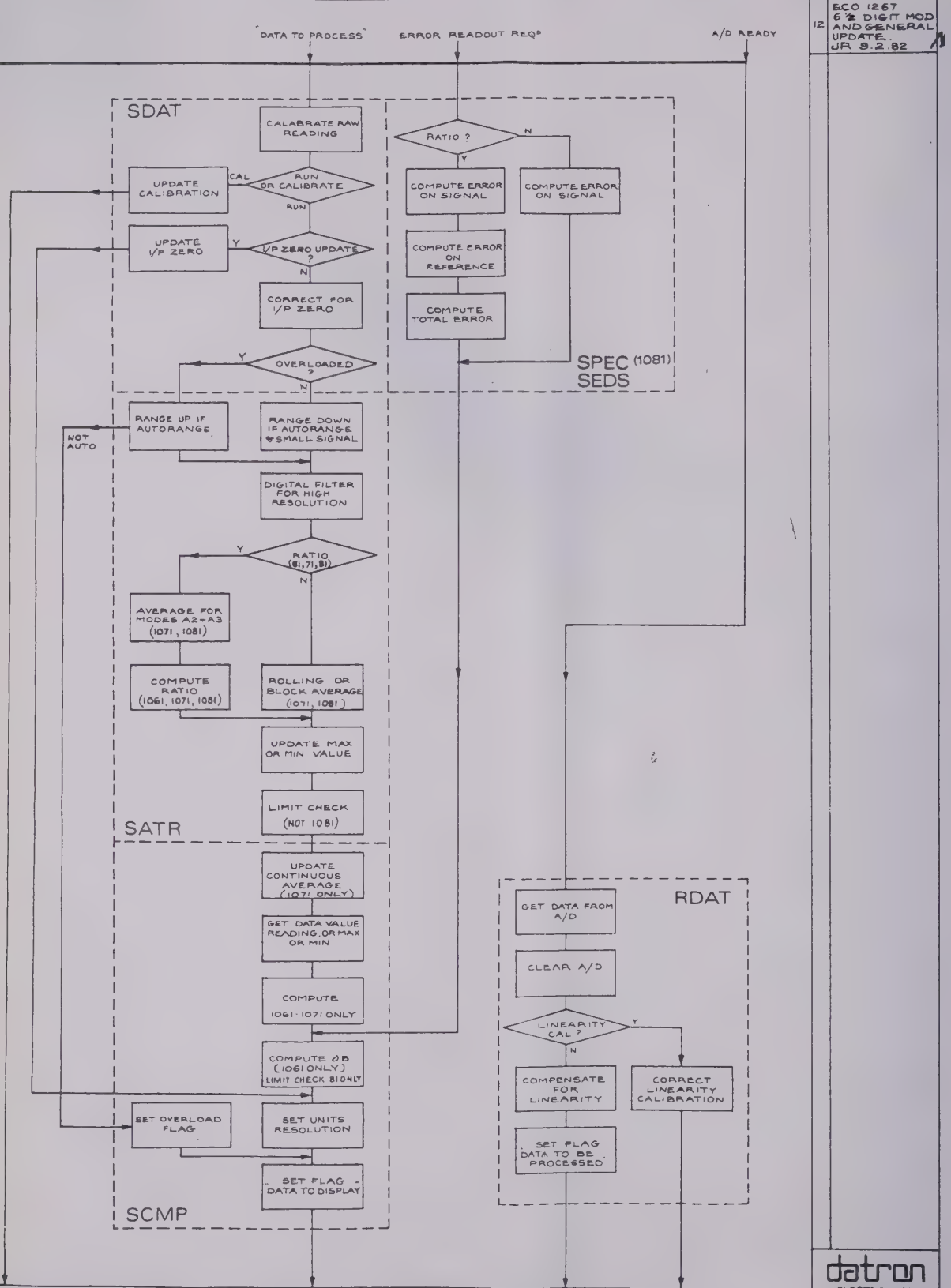



| | | | |
|---|---|---|---|
| DRAWN JR | DATE 12-1-82 | DIMENSIONS IN MILLIMETRES | |
| CHECKED G.B. | DATE 9-2-82 | SCALE | |
| APPR. | DATE | NOT TO BE SCALED | |

E.B.W.

| 5 | 6 | 7 |
|---|---|---|

| ISS. | CHANGES |
|---|---|
| 12 | ECO 1267 6½ DIGIT MOD AND GENERAL UPDATE. JR 9.2.82 |




datron
ELECTRONICS
LIMITED
NORWICH

| | | | | |
|---|---|---|---|---|
| CES<br>IMAL TO 2 PLACES ± ·1mm<br>IMAL TO 1 PLACE ± ·2mm<br>LE DIMENSIONS ± ·4mm<br>ULAR ± ½° | MATERIAL —— | ASSY DRG & PARTS LIST | TITLE<br>MASTER PROGRAM SOURCE | DRAWING No.<br>890043 |
| ESS OTHERWISE STATED<br>ANGLE PROJECTION | FINISH —— | CIRCUIT DIAGRAM<br>CHECK PROCEDURE<br>CHECK LIST | | SHEET 1 OF 27 |

**Data Control**: Data handled by the system consists of a stream of measurement information on which a number of operations are carried out. A second stream, asynchronous with the first, consists of commands derived from the front panel or digital interface, controlling both the measurement circuits and computation programs. Operations on the measurement stream basically consist of acquiring the raw data from the A-D converter, calibrating this data and carrying out any other computations, and converting and formatting the data for output. Note that a job consuming data is given higher priority than the one producing data for it, allowing a producer to place data into an empty buffer. The consumer is activated by a flag, set by the producer to indicate data ready in the buffer.

**Process Control**. Control of the instrument by the processor, initiated from the front panel or digital interface, is arranged by using a 'pipeline control' of the major system state and a 'first in/first out' buffer between the interrupt level routine receiving the control command and the main program implementing it. The major system state consists of the range, function, resolution, filter, ratio, autorange, etc., flags and the computation mode (reading, A-B, ÷C, etc.). The pipeline comprises three levels. The top, level 1, reflects the state being programmed, the second, level 2, the state of the measurement circuits and the third, level 3, the measurement being processed. When a command is input, level 1 is updated (e.g. a new range is selected) and as soon as the measuring circuits are not converting an input signal, the state in level 1 is moved to level 2 causing the measurement circuits to update to the new state. When an A-D conversion is complete, data is read from the A-D and the state transferred from level 2 to 3, providing information for the processing routines. Additionally, at this time, the level 1 to level 2 transfer is repeated and the measurement circuits again updated to allow for commands received while the conversion is in progress.

A second control mechanism used is to input all the commands via a 'first in/first out' buffer between the interrupt level routine receiving the command and the main program implementing it. Thus the processor under remote control is able to 'simultaneously' set up the requirements for the next reading, convert the current reading and process the last one.

### 3.8.1.2 The Two-Phase Clock

The 6800 requires a non-overlapping positive two-phase (Ø1, Ø2) clock. This is derived from the line-locked master clock signal (1.6MHz for 50Hz line, 1.9MHz for 60Hz – see sheet 4). The first half of M57 divides the master clock by two to 800kHz, producing antiphase squarewaves at pins 14 and 15. If data is not being transferred via the CMOS data bus; M57 (CMOS I/O) is at logic 0, M57-11 is at logic 1, so M56-8 follows M57-15. The circuit utilizes the propagation delays inherent in M54 and M55 (approx. 10ns per gate), to ensure that the positive-going segments of Phase 1 and Phase 2 clock waveforms do not overlap (as illustrated in Fig. 3-35). Q6 and Q7 drive the clock output at voltage levels demanded by the processor (0V and +5V).

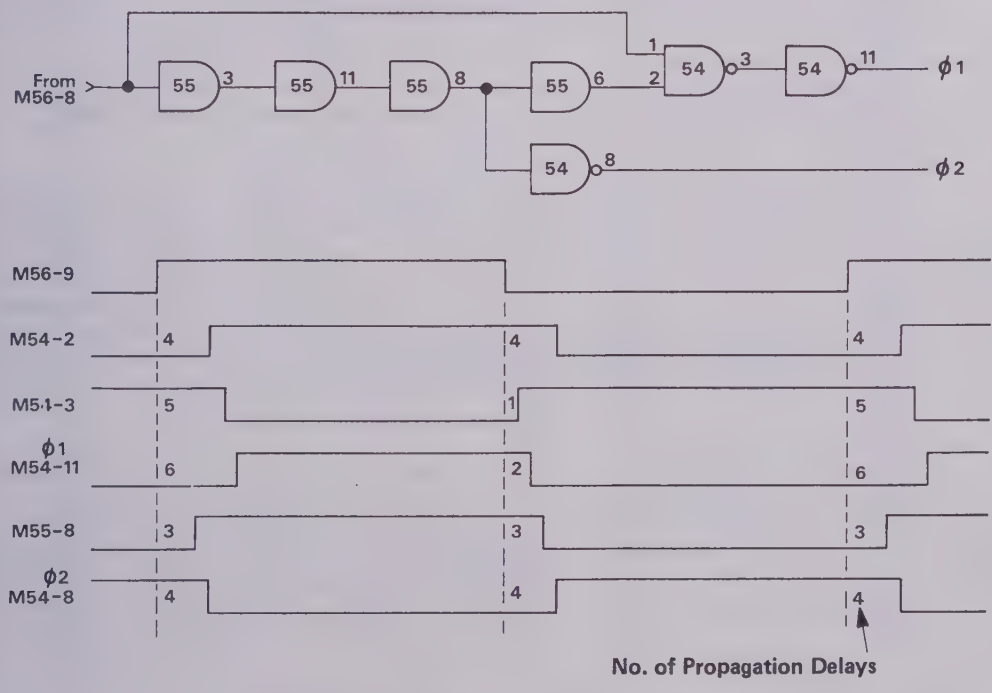



FIG. 3.35 TWO-PHASE CLOCK GENERATION

To account for slower data transfer in CMOS devices, the clock frequency is again divided by two to 400kHz when the CMOS data bus is active. The decoded address 'CMOS I/O' at M57-7 is set to logic 1 during these transfers, so a 400kHz square wave appears at M57-11. The combined effect of this and the 800kHz output from M57-15 is to 'stretch' the waveforms of the Phase 1 and 2 clock outputs (illustrated in Fig. 3.36). Thus Phase 2 remains at logic 1 for 1½ cycles of the normal 800kHz operation, allowing more time for CMOS transfers.

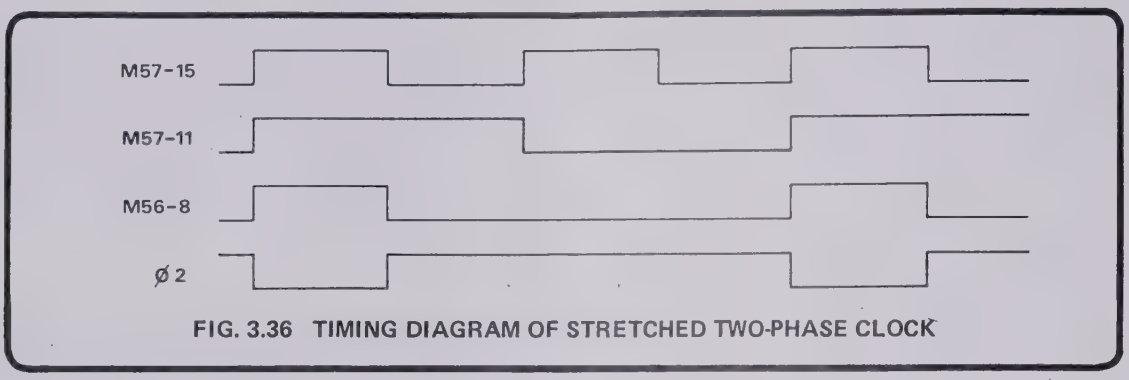



FIG. 3.36 TIMING DIAGRAM OF STRETCHED TWO-PHASE CLOCK

### 3.8.1.3 RAM/ROM Circuit

The 6800 uses 3 Read-Only Memory chips (ROMs) which contain the program necessary to run the instrument. Each ROM is able to store up to 4096, 8-bit 'bytes' of program information; grouped in program modules. The MPU accesses a byte by placing its address on the 16-bit Address Bus and driving the Valid Memory Address (VMA) line true (logic-1). The information held in that particular location is then sent back to the MPU via the Processor Data Bus.

The chip-select inputs for the RAM and ROM are decoded from a selection of high-order address bits. This selection determines the positions of the RAM and ROM in the memory map. For example: M30 is fed from A15.A13.A12 so that it covers the memory locations from #F000 to #FFFF (Note that since A14 is not decoded M30 also appears at #B000 to #BFFF).

The processor employs 1024 bytes of 8-bit wide Random Access Memory (RAM) made up from two 1024 x 4-bit RAMs (M31/M36). M31 and M36 are employed as operating memory for scratch pad operations and storing volatile data (e.g. Max, Min). The principal location of the RAM is from #0000 to #00FF. Since A8 and A9 are not decoded there are images starting at #0100, #0200, #0300.

A further 256 bytes of 8-bit wide RAM are made up from two 256 x 4-bit RAMs (M19/M20). M19 and M20 are backed up by a battery to privide the non-volatile 'Calibration' and 'Zero' memory. Three address bits A12, A14 and $\overline{A15}$ are decoded by M33 (pin 8) to enable M19/M20; but M29 (pin 6) permits the memory contents to be changed only if CAL is selected, or if the ZERO section of the memory is addressed (A7 and A6 both at logic-1).

The read/$\overline{write}$ control line R/$\overline{W}$ from the 6800 is gated with a 'Master Clock ÷ 2' signal to provide correct timing, and the address decodes include gating with VMAØ2.

An instrument power up is detected by M60/M62 causing an initialization $\overline{RESET}$ signal to be fed to the MPU via Q16. (See Fig. 3.38).

During a power-up or power-down (+5V supply line <+4.75V) a signal from the supply-level detectors prevents RAMs M19 and M20 from being overwritten by holding the CS (chip select) lines low (<0.2 volts) via Q14 for a period of approx. 25mS determined by R55/C32.

### 3.8.2 CMOS Address Decode and Input/Output Circuits (430329 sheet 2)

Information is transferred to and from CMOS devices via the CMOS Data Bus during periods when the signal CMOS $\overline{I/O}$ is at logic-1 (M33-6). CMOS I/O is addressed when $\overline{A15}$.A14.A11 is true. This occurs when memory locations starting at #4100 (and its images) are selected. The transfer of data between the Processor Data Bus and the CMOS Data Bus takes place at 400kHz, the Read/Write lines selecting the direction of the information through the tri-state buffers M4, M5 and M6.

In order to address the various CMOS input/output devices, the address lines must be further decoded. M32 is a 1-of-10 decoder, providing 5 addressable drives; M16 is a dual 1-of-4 decoder addressing the front panel circuitry and the digital elements of the A-D converter. A summary of the decoded CMOS address signals is given in Fig. 3.39.

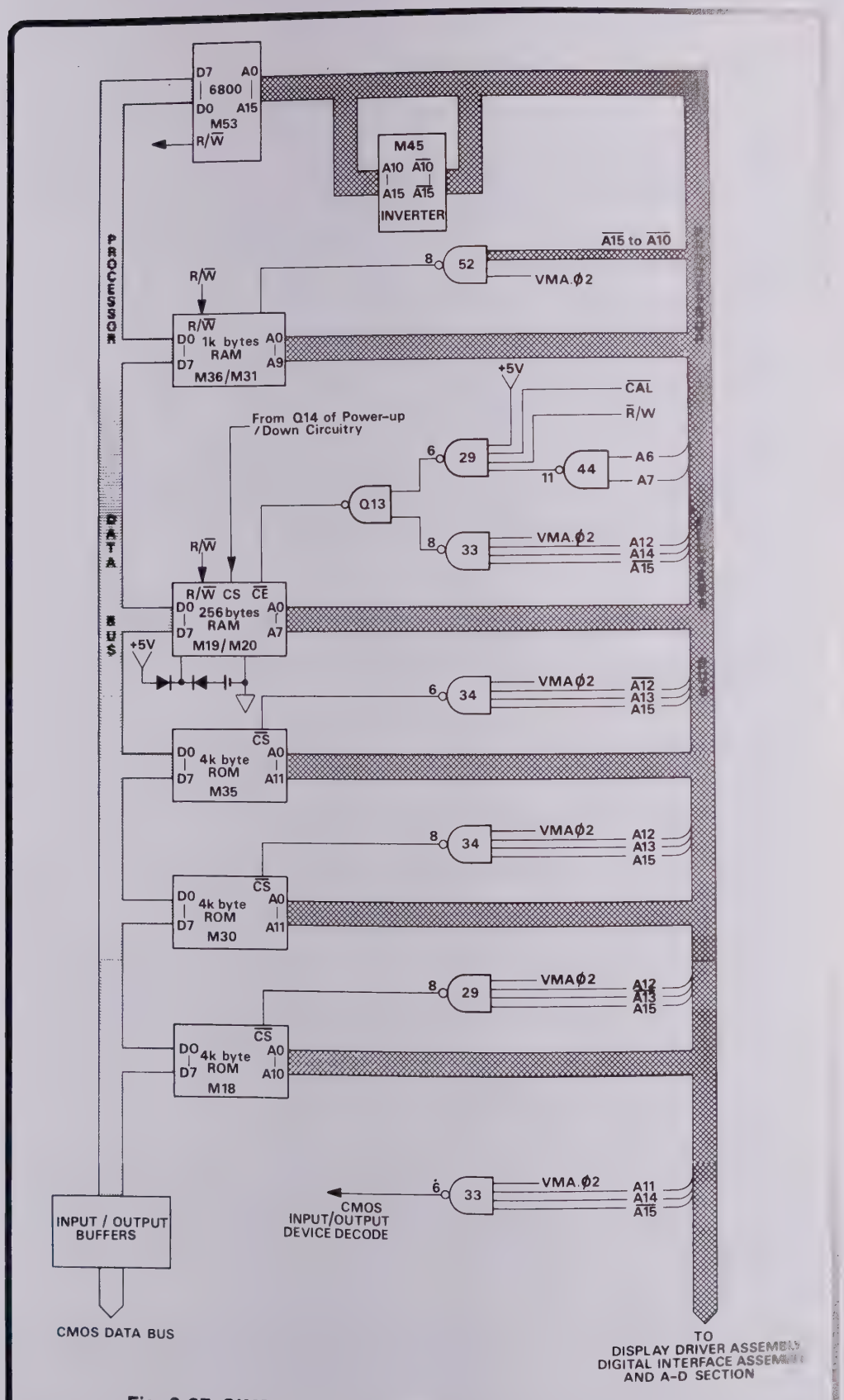



**Fig. 3.37 SIMPLIFIED DIAGRAM OF MEMORY CIRCUITS**

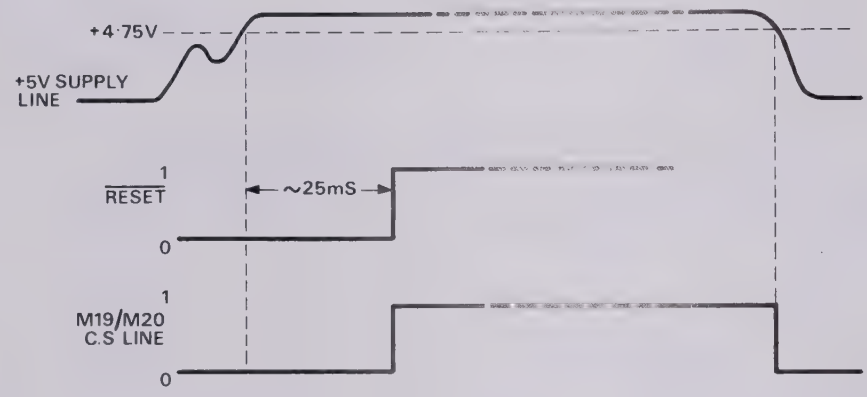



FIG. 3.38 START UP AND NON-VOLATILE RAM PROTECTION

| A6 | A5 | A4 | A2 | A1 | A0 | SIGNAL | M32/M16 Pin No. | Operation |
|---|---|---|---|---|---|---|---|---|
| 0 | 0 | 0 | 1 | X | X | $\overline{\text{XKYBRD}}$ | M32-2 | Keyboard read/write |
| 0 | 0 | 1 | X | X | X | | (M32-4) | Forces a MPU 'power up' sequence |
| 1 | 0 | 0 | X | X | X | | (M32-11) | Triggers processor time guard (M43) |
| 0 | 1 | 0 | 1 | X | X | $\overline{\text{XADDT}}$ | M32-6 | A-D main counter output enable |
| 0 | 1 | 1 | X | X | X | | (M32-9) | Analog interface address latch input enable |
| 0 | 0 | 0 | X | 0 | 0 | $\overline{\text{XKDSP0}}$ | M16-7 | Addresses keyboard l.e.d. latches |
| 0 | 0 | 0 | X | 0 | 1 | $\overline{\text{XKDSP1}}$ | M16-6 | |
| 0 | 0 | 0 | X | 1 | 0 | $\overline{\text{XKDSP2}}$ | M16-5 | |
| 0 | 0 | 0 | X | 1 | 1 | $\overline{\text{XKDSP3}}$ | M16-4 | |
| 0 | 1 | 0 | X | 0 | 0 | $\overline{\text{XADSTA}}$ | M16-9 | A-D, and interrupt status output enable |
| 0 | 1 | 0 | X | 0 | 1 | | M16-10 | CAL INTERVAL switch output enable |
| 0 | 1 | 0 | X | 1 | 0 | $\overline{\text{XADCTL}}$ | M16-11 | A-D control latches, input enable |
| 0 | 1 | 0 | X | 1 | 1 | $\overline{\text{XADDLY}}$ | M16-12 | A-D delay counter input enable |

FIG. 3.39 CMOS ADDRESS DECODING

### 3.8.3 Analog to Digital Conversion (Digital Section)

#### 3.8.3.1 General Principle

Block diagram Fig. 3.40 outlines the essentials of the digital section and should be used with flowchart Fig. 3.41 in order to follow the operation of this section.

The function of this section of the circuitry is to generate the sequence that when transferred to the analog section, controls the sequence from RESET through the integration cycle and back to RESET. The circuitry controls the length of SIG and BIAS and counts during REF 1 and REF 2, the accumulated count being proportional to the length of the reference periods, which in turn is proportional to the measured input signal. At the end of each reading cycle the count is read by the MPU, processed and displayed.

The sequence is controlled by stepping M47 through Q0 to Q7. Each 'Q' output from M47 goes to logic-1 to activate its stage of the sequence; completion of one stage generates the 'Enable' for the next, via M46 switches, as a logic-0 state at M47-13. Timing is synchronized by Master-Clock/2 positive-going edges at M47-14, when M47 is enabled.

#### 3.8.3.2 Preset Procedure

As part of the initialisation routine (at switch on), M47 (used as the sequence controller), is reset from M37-11, causing M47-2 to be logic '1'. Thus the control lines $\overline{A}$, $\overline{B}$ and $\overline{C}$ put the analog section of the A-D into RESET (See Fig. 3.42). The Address Bus decoded signal $\overline{XADDLY}$ is taken low, enabling the presetting of the delay counters M13 and M14 from the CMOS Data Bus, the amount of delay being determined by the selected range, function and filter state, see Fig. 3.43. The A-D control latches, M11 and M12 are then enabled by $\overline{XADCTL}$ to (i) reset the command latch M1 (from M11-4), (ii) set the resolution of the main counter (M11-5 and 6), (iii) select trigger gate (M12-3, 4 or 5) and (iv) reset the data ready latch (M12-6).

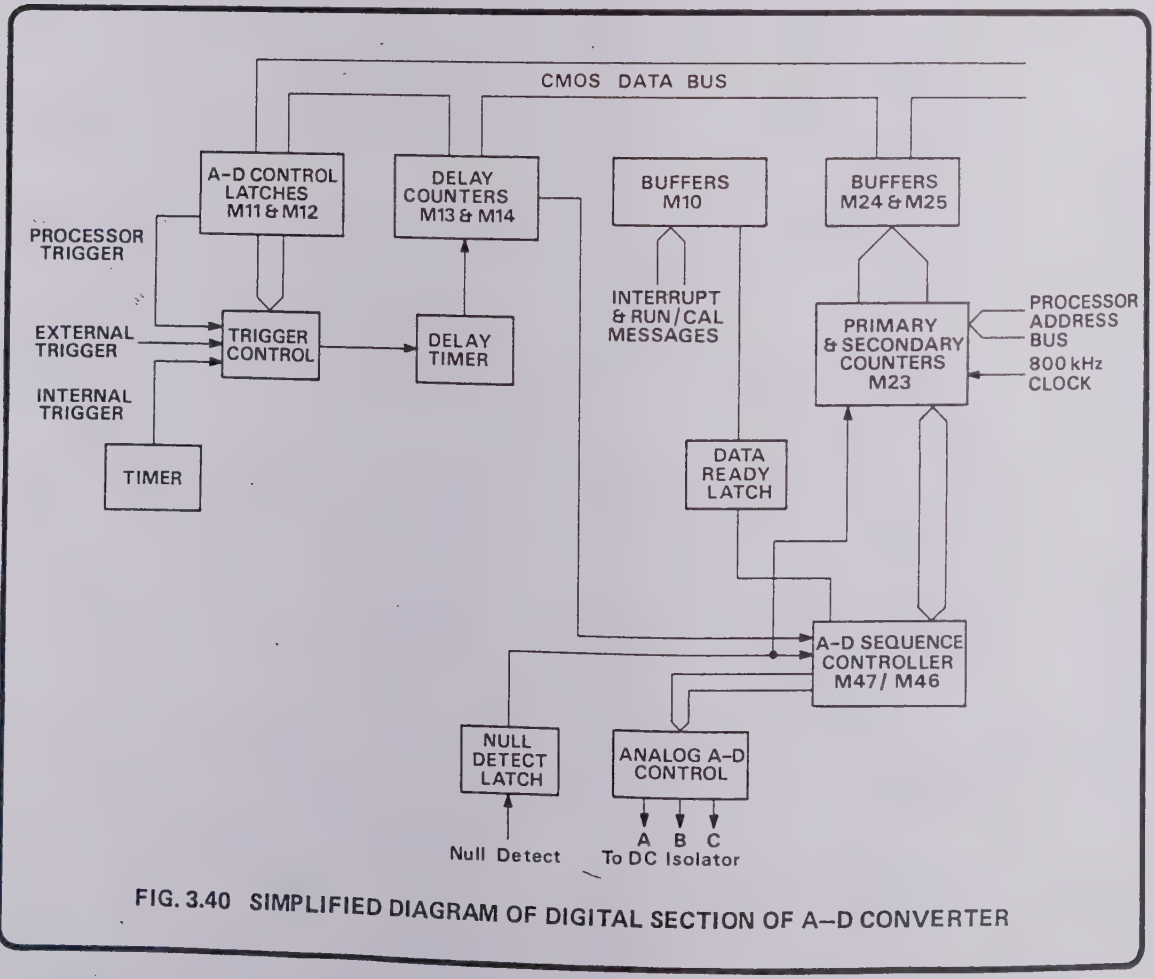



FIG. 3.40 SIMPLIFIED DIAGRAM OF DIGITAL SECTION OF A–D CONVERTER

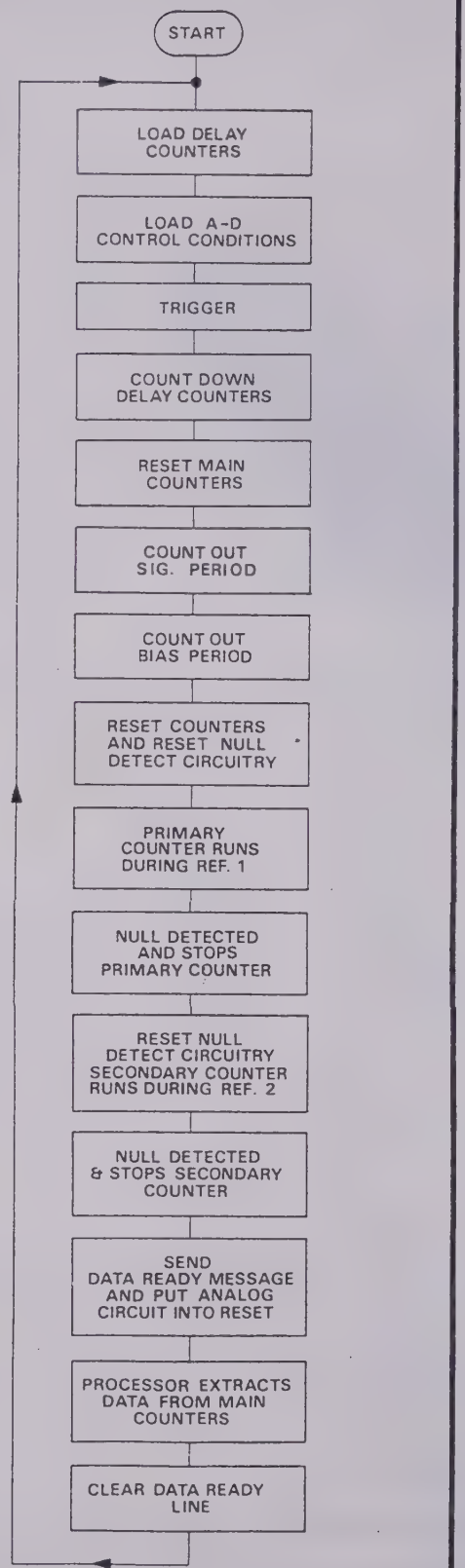

START
LOAD DELAY COUNTERS
LOAD A-D CONTROL CONDITIONS
TRIGGER
COUNT DOWN DELAY COUNTERS
RESET MAIN COUNTERS
COUNT OUT SIG. PERIOD
COUNT OUT BIAS PERIOD
RESET COUNTERS AND RESET NULL DETECT CIRCUITRY
PRIMARY COUNTER RUNS DURING REF. 1
NULL DETECTED AND STOPS PRIMARY COUNTER
RESET NULL DETECT CIRCUITRY SECONDARY COUNTER RUNS DURING REF. 2
NULL DETECTED & STOPS SECONDARY COUNTER
SEND DATA READY MESSAGE AND PUT ANALOG CIRCUIT INTO RESET
PROCESSOR EXTRACTS DATA FROM MAIN COUNTERS
CLEAR DATA READY LINE

FIG. 3.41 FLOWCHART OF A–D DIGITAL SECTION

| SIGNAL | $\overline{A}$ | $\overline{B}$ | C |
|---|---|---|---|
| RESET | 1 | 1 | 0 |
| SYNC | 1 | 1 | 0 |
| SIG | 1 | 1 | 1 |
| BIAS | 0 | 1 | 1 |
| WAIT | 0 | 1 | 1 |
| REF 1 | 1 | 0 | 1 |
| REF 2 | 0 | 0 | 1 |
| END | 1 | 1 | 1 |

FIG. 3.42 A-D ANALOG SEQUENCE CONTROL SIGNALS

| 1061/A SELECTIONS | | M13/M14 COUNT | |
|---|---|---|---|
| FUNCTION | RANGE | $\overline{\text{FILTER}}$ | FILTER |
| DCV | All Ranges | 2 | 101 |
| Option 12 ACV<br>DCV + ACV | All Ranges | 61 | 251 |
| Option 10 ACV<br>DCV + ACV<br>ACI<br>DCI + ACI | All Ranges | 46 | 151 |
| DCI | 100μA-1mA | 2 | |
| | 10mA | 3 | 101 |
| | 100mA | 5 | |
| | 1A | 6 | |
| kOhms | 10Ω-100kΩ | 2 | 101 |
| | 1MΩ | 4 | 121 |
| | 10MΩ | 31 | 251 |

FIG. 3.43 COMMAND DELAYS

### 3.8.3.3 A-D Measurement Sequence

**Trigger.** The trigger, required to initiate the measurement sequence, is generated from one of three possible sources:

1. Internally generated 3/second trigger, from timer M61-7.

2. Externally generated trigger, from EXT TRIG on rear panel via M24-13.

3. A MPU derived trigger from M11-3 generated when auto-ranging, pressing MANUAL when HOLD selected, during calibration, an INPUT ZERO sequence or via the digital interface.

The trigger source is selected by the latched data on M12, enabling one of the three gates of M2.

**Delay.** The trigger pulse clocks the 'command latch' M1-11 causing the timer, M15, to output clock pulses (200Hz) to the delay counters (M13 and M14) after a delay of approx. 1.5mS set by C5, R8, R9, R11. The delay counters proceed to count down to zero, at which time the delay latch (M26) is clocked. Thus M26-14 becomes a logic '0', enabling the sequencer M47 (an octal counter) to proceed on to the next step via M46-2.

**SYNC.** The SYNC phase from the sequencer resets the counters of M23 and places the analog section of the A-D into SIG. The pulse is fed back to M47 via M46-3 to step on the sequencer.

**SIG.** During the time that the SIG line is at logic-1 (M47-3), the primary counter in M23 is enabled and counts out the signal period (20ms in normal mode, or 2.5ms superfast). When the counter times out, M23-23 goes to logic-0, enabling M47-13 via M23-14. The next Master-Clock/2 at M47-14 steps the sequence on to BIAS (M47-7 to logic-1, M47-3 reverts to logic-0).

**BIAS.** The BIAS signal (M47-7) is transferred to the analog section of the A-D by changing the state of the $\overline{A}$ line (M38-9 to a logic '0'). BIAS also enables the secondary counter of M23 to count out the BIAS period (20$\mu$S). The signal indicating the end of this period is passed via M46-9 causing the sequencer to carry on to the next step. The BIAS signal also resets the 'delay latch' (M26) ready for the next measurement cycle, and the 'null detector' latch (M22A).

**WAIT.** The WAIT pulse resets the counter of M23 via M39-10, keeps the $\overline{A}$ line to the analog section low, clocks the polarity null detect latch M22(B) causing a logic '1' on pin 1 if the signal applied to the analog section of the A-D converter was positive (logic '0' if negative) and is fed back to enable the sequencer via M46-3.

**REF 1.** The high to low edge of WAIT causes the $\overline{A}$ to change state and going into REF 1 makes $\overline{B}$ a logic '0'. The analog side is then in the condition to start 'ramping down'. While REF 1 is high the primary counter of M23 is enabled (pin 3) and counts the period of REF 1.

REF 1 is ended when a null detector pulse is detected and latched on to M22. This causes the sequencer to step on once more from M46-3, the low to high edge from pin 4 disabling the primary counter.

**REF 2.** The REF 2 signal changes the state of the $\overline{A}$ line (causing the analog section to ramp down at a slower rate), resets the 'null detect' latch and enables the secondary counter of M23 (Pin 13) to count the period of REF 2. If the secondary counter overflows, the primary counter is incremented from M23-16.

As in REF 1, a null detector pulse causes the counting period to end (M22-12) and increments the sequencer via M46-3 causing the $\overline{A}$ and $\overline{B}$ lines to change state.

**END.** The low to high edge from M47-10 is fed back to M47, via M48-6 giving a master reset. Thus the sequencer is placed into RESET.

**RESET.** The sequence pulse from M47-2 clocks the 'data ready' latch M1-3 placing a signal on to the CMOS Data Bus via tri-state buffer M10 indicating to the MPU that a reading is ready to be taken from the main counter M23. Data is extracted from the counters in three bytes (controlled by the A1 and A0 lines of the processor address bus) with the counter output buffers, M24 and M25 being enabled by $\overline{XADDT}$, a decoded processor address.

The RESET signal is also passed to the analog section of the A-D by changing the state of the C line.

Once the data has been extracted from the main counter the set-up procedure is then repeated to await a further trigger.

### 3.8.3.4 Master Clock and Line Locking (430329 sheet 4)

To give improved rejection of line frequency related noise, the 1061 is linelocked. The line frequency is sampled and compared to the internal master clock. Synchronisation is achieved by adjusting the master clock frequency.

A sinusoidal line frequency signal from the 5V mains tap is converted to a square-wave (M25-13) and ÷2(M26-1) before being fed to the comparator section of the ULA M23 (sheet 3). The MASTER CLOCK ÷2 signal is fed to ripple counter M27 which outputs a signal of twice the estimated line frequency, for line related periods, controlled by the ULA (M23-18). This signal is fed to M23-19 (via inverter M39) and after a further ÷2, is compared with the actual line frequency (see Fig 3.44).

The ULA determines whether the master clock is running too slow or too fast, producing a signal on pin 20 whose pulse-width is proportional to the difference. The output of pin 21 is a 25Hz square-wave which is fed to the up/down input of counters M41/50. Thus depending on the position and down period of the pulse, the count held is increased or decreased.

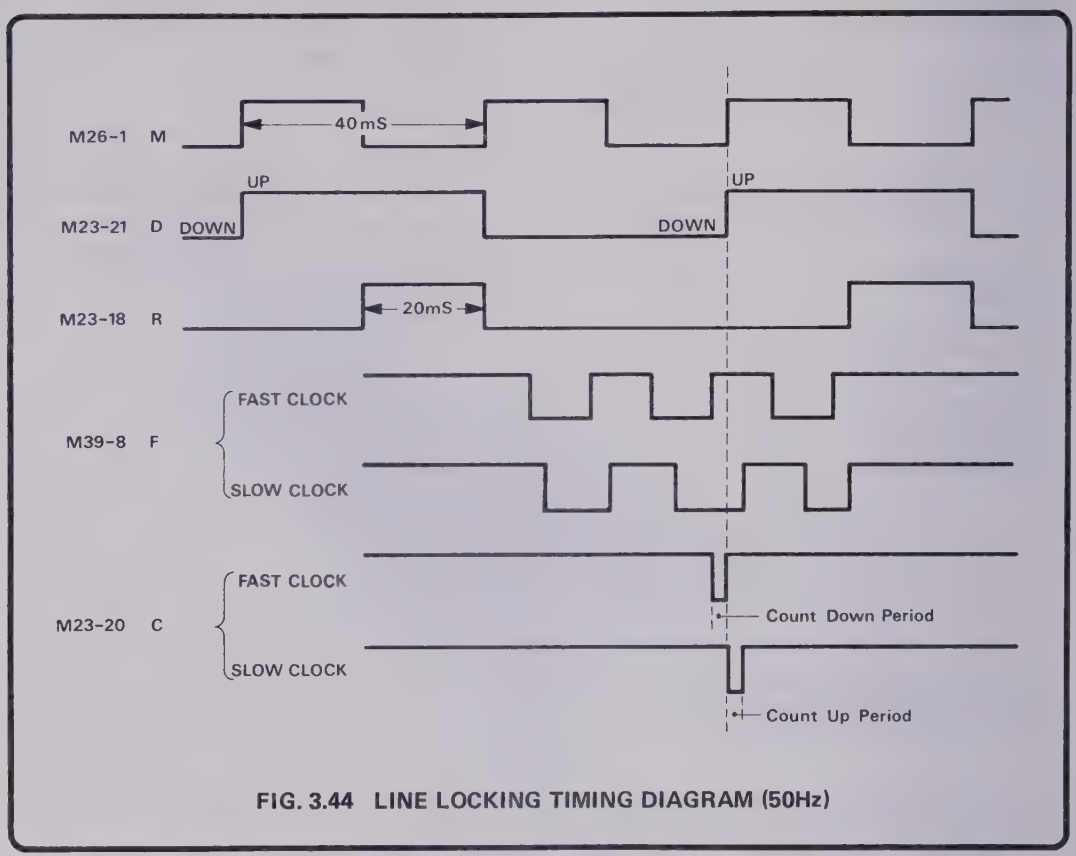



**FIG. 3.44 LINE LOCKING TIMING DIAGRAM (50Hz)**

Latches M42/51 are updated with this new count during the A-D RESET period and applies the count to resistor network AN4 which forms a D-A converter. Changing the voltage applied to varicap D9 alters its capacitance, thus adjusting the LC of the Colpitts oscillator. Therefore the frequency of the Master Clock is increased or decreased to be an exact multiple of the mains frequency.

## 3.9 FRONT PCB ASSEMBLY (Circuit Drawing No. 430294)

The Front pcb assembly accepts the measurement signals, digitally displays the value, provides manual control of the measurement circuits and data conditioning, and gives a visual status indication of the selectable instrument states.

### 3.9.1 Analog Input Signals (430294 sheet 2)

The Front pcb connects the terminals to the 2/4-wire Ohms and Local-Remote Guard switches. Thus in '2-wire': Hi is connected to I+, and Lo to I−, through thermistors R1 and R2. In 'Local': Guard is not directly linked to the front panel Lo terminal, as this becomes active in 4-wire Ohms. Instead, 'Local' links Guard to Ohms Guard, which is permanently connected to DC Isolator Lo.

Signals applied to the six front panel terminals are routed through to the Rear pcb (to the Rear Input/Ratio pcb or Rear Input pcb if Option 40 or 41 is fitted) via the Signal Cable assembly. Each of the terminal leads passes through its own HF choke, all six inductors being wound in the same direction on the same core. This 'Common Mode' choke presents high impedance to transient common mode currents, but low impedance to normal mode differential input currents.

Two screened cables are used to transfer the signals to the rear: I+ and Hi are carried in one; I−, Lo and Ohms Guard in the other. Guard is carried via the cable screens, thus guarding the signals during transfer.

### 3.9.2 Display Signals (430294 sheet 1)

The front panel assembly routes the display signals from the Display Driver board to the gas discharge display.

### 3.9.3 Keyboard Data Encode (430294 sheet 1)

Selection of a front panel keyswitch causes one of the two 16-key encoders (M7 or M10) to send a data available message to M2 (a data latch) and to remember which key was pressed. The output of M2, (pin 1 or 13) signals the interrupt circuitry of the Digital Board (IRQK1 or IRQK2).

When the microprocessor accepts the interrupt and has located the source, the XKY BRD line to pin 13 of M7 and M10 is taken low, enabling the data outputs of the encoders to be placed on to the CMOS data bus (See Fig. 3.45 for the key select coding). This signal also resets M2 ready for the next key selection.

| KEY | M7 | | | |
|---|---|---|---|---|
| | 14 | 15 | 16 | 17 |
| | CD7 | CD6 | CD5 | CD4 |
| 100 | 0 | 0 | 0 | 0 |
| 10 | 0 | 0 | 0 | 1 |
| 1000 | 0 | 0 | 1 | 0 |
| 10MΩ | 0 | 0 | 1 | 1 |
| 1 | 0 | 1 | 0 | 0 |
| .1 | 0 | 1 | 0 | 1 |
| 10Ω | 0 | 1 | 1 | 0 |
| AUTO | 0 | 1 | 1 | 1 |
| DC | 1 | 0 | 0 | 0 |
| kΩ | 1 | 0 | 0 | 1 |
| KEYBOARD | 1 | 1 | 0 | 1 |
| I | 1 | 1 | 1 | 0 |
| INPUT ZERO | 1 | 1 | 1 | 1 |

| KEY | M10 | | | |
|---|---|---|---|---|
| | 14 | 15 | 16 | 17 |
| | CD3 | CD2 | CD1 | CD0 |
| HOLD | 0 | 0 | 0 | 0 |
| RATIO | 0 | 0 | 0 | 1 |
| TEST | 0 | 0 | 1 | 0 |
| SPEC | 0 | 0 | 1 | 1 |
| (A–B) | 0 | 1 | 0 | 0 |
| dB | 0 | 1 | 0 | 1 |
| ÷ C | 0 | 1 | 1 | 0 |
| MAX | 0 | 1 | 1 | 1 |
| MIN | 1 | 0 | 0 | 0 |
| RESET | 1 | 0 | 0 | 1 |
| MAN | 1 | 0 | 1 | 0 |
| INPUT FILTER | 1 | 1 | 0 | 1 |
| AC | 1 | 1 | 1 | 1 |

FIG. 3.45 CMOS DATA BUS : KEY SELECT CODING

### 3.9.4 Keyboard L.E.D. Data Decode (430294 sheet 1)

The XKY BRD signal is inverted by Q1, R7, C1, R6 partially enabling the L.E.D. data latches M4, M5, M6, M8, M9, M11 and M12 while information is not being extracted from the keyboard encoders. The data latches are divided into four sets, M6 and M4, M8 and M5, M12 and M11, M9 being fully enabled from the XKD SPØ – XKD SP3 lines respectively.

On initialisation or after a change of the instrument's selectable states, the L.E.D. data latches are updated by placing data on the CMOS Data Bus (See Fig. 3.46), firstly to M8 and M5 (enabled from XKD SP1) and 'clocking' from the CMOS CLK line (J2-6), secondly to M12 and M11, then M9 and finally M6 and M4.

The output of the L.E.D. latches provide the signals to the bases of the L.E.D. drive transistors, switching them on or off as required.

| CMOS DATA LINE | M12/M11 | M8/M5 | M6/M4 | M9 |
|---|---|---|---|---|
| CDO | ÷C | DC | AUTO | |
| CD1 | dB | kΩ | 10Ω | |
| CD2 | SPEC | INPUT ZERO | .1 | |
| CD3 | TEST | INPUT FILTER | 1 | |
| CD4 | A–B | KEYBOARD | 10 | |
| CD5 | MIN | | 100 | MAN |
| CD6 | MAX | I | 1000 | RATIO |
| CD7 | RESET | AC | 10MΩ | HOLD |

FIG. 3.46 CMOS DATA BUS : LED-SELECT CODING

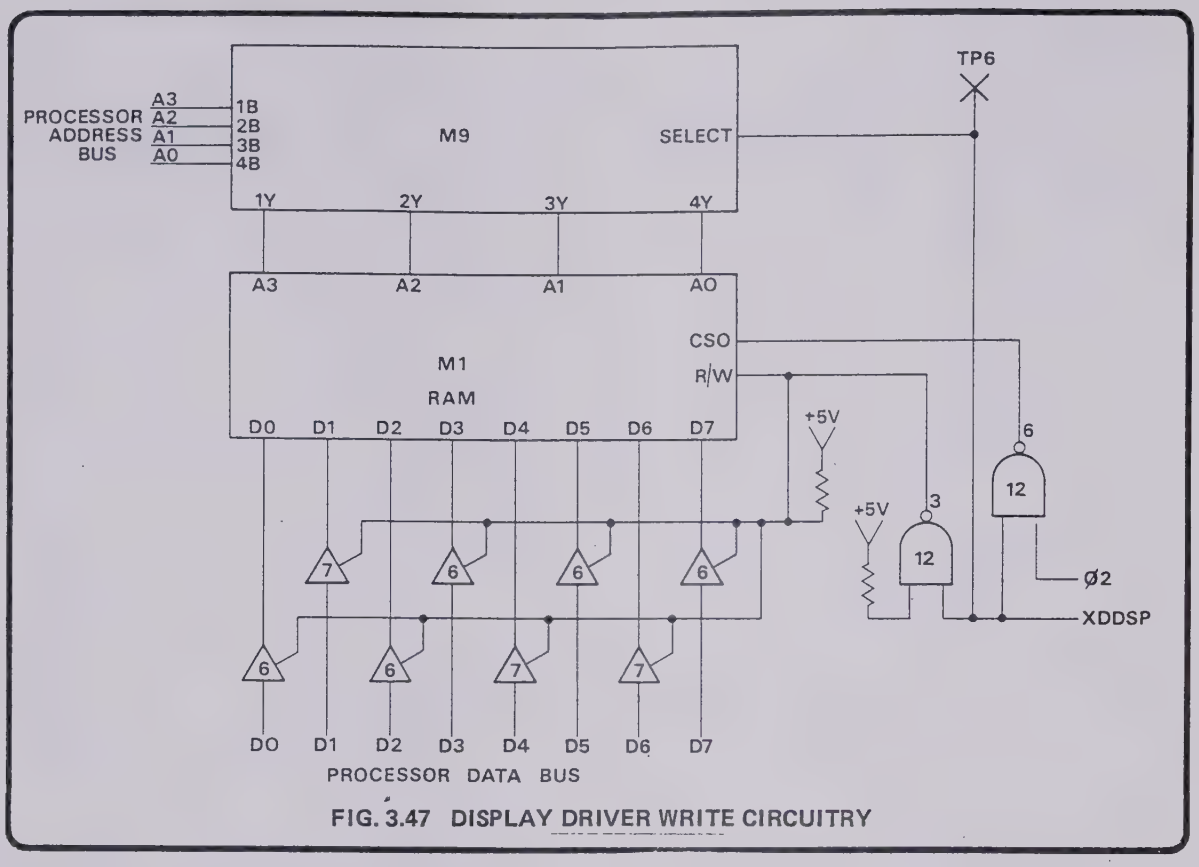



FIG. 3.47 DISPLAY DRIVER WRITE CIRCUITRY

| COUNTER (M8) | | | | RAM (M1) | | | | Display block energised or operation implemented from M11 |
|---|---|---|---|---|---|---|---|---|
| $Q_3$ | $Q_2$ | $Q_1$ | $Q_0$ | $A_3$ | $A_2$ | $A_1$ | $A_0$ | |
| 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 3 |
| 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 5 |
| 0 | 0 | 1 | 1 | 0 | 1 | 1 | 0 | 7 |
| 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 9 |
| 0 | 1 | 0 | 1 | 1 | 0 | 1 | 0 | 11 |
| 0 | 1 | 1 | 0 | 1 | 1 | 0 | 0 | |
| 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | |
| 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 2 |
| 1 | 0 | 0 | 1 | 0 | 0 | 1 | 1 | 4 |
| 1 | 0 | 1 | 0 | 0 | 1 | 0 | 1 | 6 |
| 1 | 0 | 1 | 1 | 0 | 1 | 1 | 1 | 8 |
| 1 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 10 |
| 1 | 1 | 0 | 1 | 1 | 0 | 1 | 1 | Reset Counter |

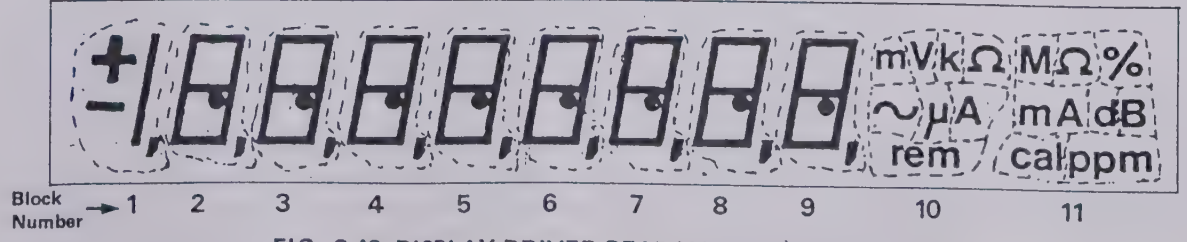



FIG. 3.48 DISPLAY DRIVER READ MODE ADDRESS STATES

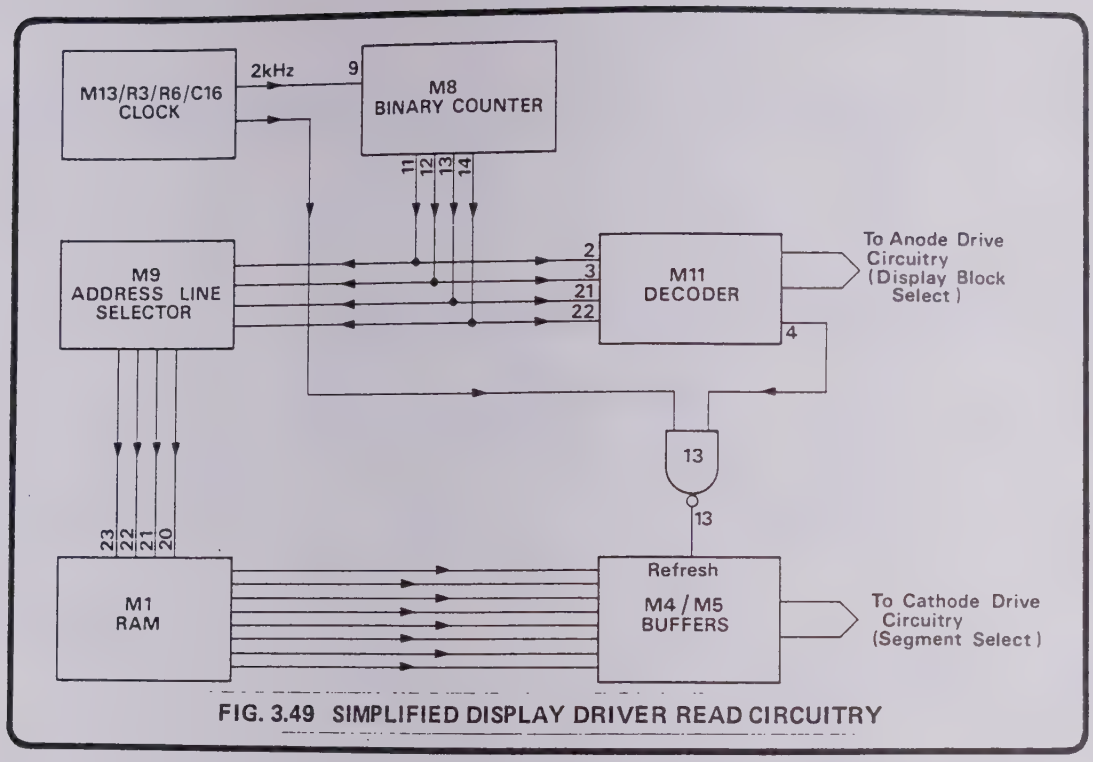



FIG. 3.49 SIMPLIFIED DISPLAY DRIVER READ CIRCUITRY

## 3.10 DISPLAY DRIVER ASSEMBLY (Circuit Drawing No. 430330).

Basically, the Display Driver assembly receives the display information from the microprocessor (running at 800kHz) and stores it in a Random Access Memory (RAM) digit by digit. This data is then read out at a slower frequency (2kHz), level shifted and output to the gas discharge display.

NOTE: In the following description, each bar, decimal point or legend is referred to as a display segment and each set of segments i.e. ±1, ⊟ or a legend block, is referred to as a display block.

### 3.10.1 Write Mode

On completion of a reading or when certain modes are selected, (e.g. ERROR, keyboard entry), the processor indicates to the Display Driver Board that data is ready to be transferred by the signal XDDSP (TP6). This causes the RAM (M1) to be placed into its write mode and the quadruple 2-line to 1-line data selector, M9, to select the 'B' inputs which are connected to the processor address bus.

The signal XDDSP also causes the tri-state buffers M6 and M7 to become enabled, causing the data input lines of the RAM to be connected to the processor data bus. Thus under MPU control, the display data (±1, ⊟ 's, decimal points and legends) is written into the RAM.

Once this transfer of data is complete the RAM becomes deselected, the buffers return to their third state inhibiting the data bus to the RAM and connects the 'A' inputs of M9 to the address lines of the RAM.

### 3.10.2 Read Mode

Discharge between adjacent display blocks is prevented by time multiplexing and sending information to alternate blocks. A particular display block is selected by driving its anode, and a particular segment by driving the segment cathode.

The free running clock M13, R3, R5, C16, produces a 2kHz signal (M13-9) to drive a 4-bit binary counter, M8, which provides the control of the address lines in the read mode (See Fig. 3.49). The display block selection is achieved by decoding these 4 lines into 16 bits using M11. The output lines of M11 are connected to the bases of transistors Q1-Q3, Q13-Q20 which act as anode switches. Note that when the address lines are in the state 0000 the output of M11 (pin 11) selects the anode to block 1, 0001 selects the anode to block 3 (M11-9), 0010 ... block 5, etc., thus the display blocks are selected alternately.

To select the appropriate segment data from the RAM to match the display block selection the address lines are given a left hand bit rotation, i.e. if the output of M8 is labelled DCBA, ($2^3$, $2^2$, $2^1$, $2^0$), the address input of M1 would be CBAD. (Fig. 3.48 gives the state of the address lines for each display block). The particular display block segment data is recalled by the RAM, buffered by M4 and M5, level shifted −180 volts by R8-R15, C4-C11 causing Q5-Q12 to drive the cathodes, D1-D10 acting as restoration diodes. Between the transfer of each set of segment data, M13-13 is taken high, causing the outputs of M4 and M5 to be a logic '0'. This produces a refresh period for capacitors C4-C11 to discharge from the −180V supply through the restoration diodes.

## 3.11 IEEE 488 STANDARD DIGITAL INTERFACE (Circuit Diagram No. 430427)

The IEEE Digital Interface assembly contains the extra memory circuitry required for the execution and decoding of interface functions, and for data input and output transfers. Simplified diagram Fig. 3.50 shows its essential features.

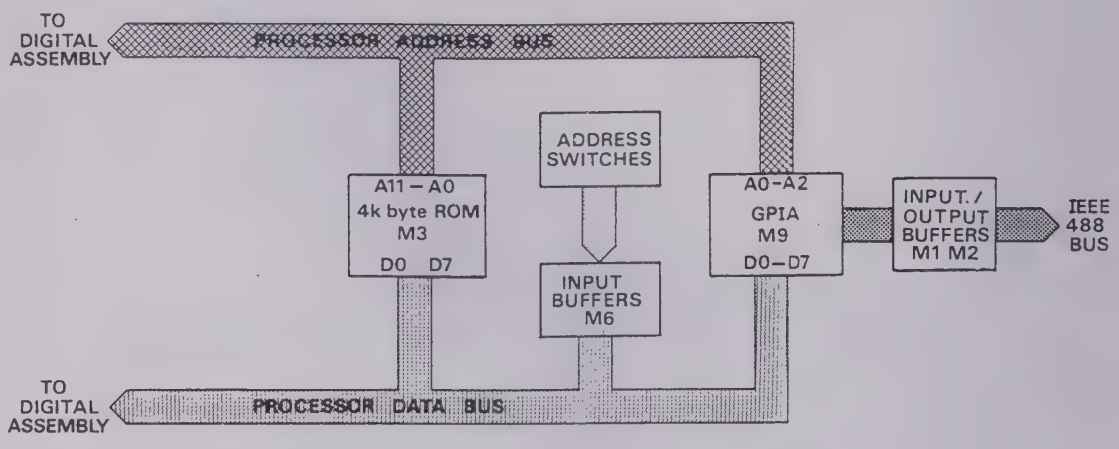



Fig. 3.50 SIMPLIFIED DIAGRAM OF IEEE ASSEMBLY

### 3.11.1 ROM Circuit

The IEEE Digital Interface assembly acts as an extension to the Digital assembly with connections to both the Processor Address and Data Buses. The board houses 4k bytes of program memory (M3) containing the sub-routines to control the instrument from the IEEE 488 Bus. The ROM receives the address information, with chip selection being made by decoding address lines A3-A11 with XIOBD and master clock Ø2.

### 3.11.2 Interface Circuit

The General Purpose Interface Adaptor (GPIA). M9, provides the interface between the IEEE 488 Standard Instrument Bus and the 68000 microprocessor. The MPU can receive, process and send messages to the interface through the GPIA.

The GPIA is able to automatically handle the following interface protocal[1] :-

Single address capability
Source and acceptor handshake
Talker and Listener states
Service Request
Parallel Poll
Device Clear
Device Trigger

With MPU it is also capable of:-
Programmable Interrupts
Storing the instrument's address
Control of the interface input/output buffers.

The GPIA is selected by decoding address lines A3-A11 with XIOBD. Address lines A0-A2 with the state of the MPU R/$\overline{W}$ line select one of the 8 read only or 7 write-only registers in the GPIA, enabling the MPU to send or receive data over the interface.

The two signals T/$\overline{R}$1 and T/$\overline{R}$2 are used to control low power transceivers (formed from M1, 2) which drive the interface bus.

[1] For further information refer to 'Getting aboard the 488 Bus' published by Motorola.

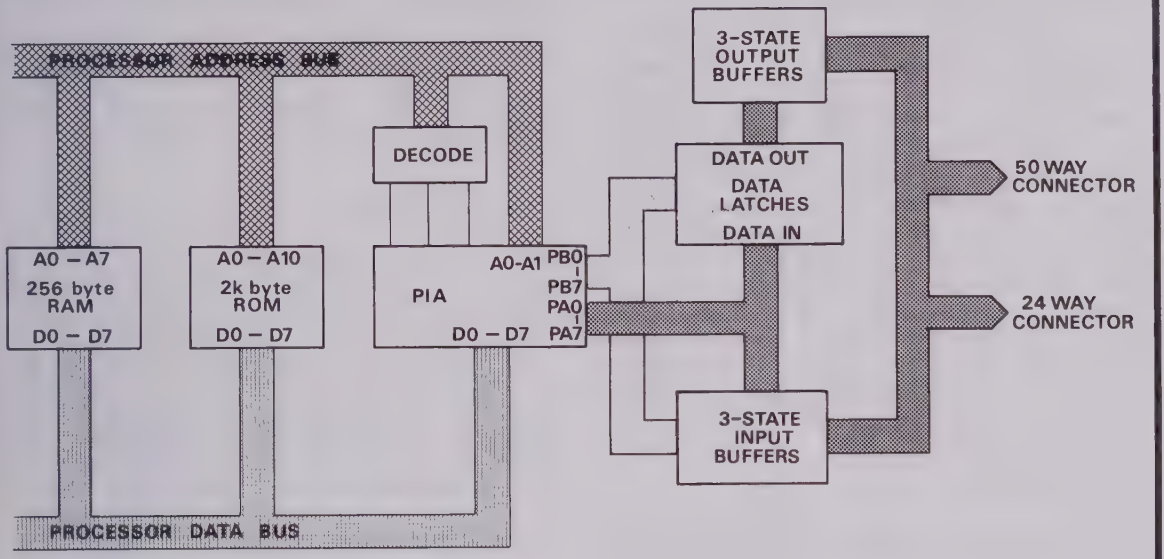



FIG. 3.51 SIMPLIFIED DIAGRAM OF BCD INTERFACE ASSEMBLY

## 3.12 BCD DIGITAL INTERFACE (Circuit Drawing No 430332)

The BCD Digital Interface assembly contains the extra memory and circuitry required for the execution and decoding of interface functions and to perform data output transfers. Simplified diagram, Fig 3.51 shows the essential features of this board.

### 3.12.1 RAM/ROM Circuit

The BCD Digital Interface assembly acts as an extension to the Digital assembly with connections to both the Processor Address and Data Buses. The board contains 2k bytes of program memory (M11) containing the sub-routines to control the instrument from the BCD Interface. Extra 'operating (scratch pad) memory' is provided by two 256x4 bit RAMS (M22, M23). Both the ROM and RAM's receive the address information, with chip selection being made by decoding address lines A8-A11 with XIOBD, R/$\overline{W}$ and Ø2.

### 3.12.2 Interface Circuit

The Peripheral Interface Adapter (PIA), M1, provides the means of interfacing the BCD input/output to the 6800 microprocessor. The PIA is selected by decoding address lines A9-A11 with XIOBD. Address lines A0 and A1 together with MPU data messages configure the six internal registers controlling data flow and external control signals.

Peripheral Data lines PBO-PB7 (M1 pins 10-17) are used as enable lines allowing data to be placed on the BCD Data Bus from the Remote Programming Input and control lines of the BCD Output (2 bytes) and allowing data to be placed into output latches M7-M10, M12-M16 (5 bytes).

The length of PRINT COMMAND is controlled by the timer M2, R1, C3.

## 3.13 REAR (POWER SUPPLY) PCB ASSEMBLY (Circuit Drawing No. 430295)

### 3.13.1 General

The line transformer and power supply components are situated at the rear right hand side of the instrument, when viewed from the front. Transformers T1 and T2 are of toroidal construction mounted one on top of the other and bolted to the rear panel. T1 has a split primary comprising two 115V windings, intended for either series or parallel connection depending on the line voltage. An earth screen is interposed between primary and secondary windings to minimise electrostatic coupling, and is grounded to line earth. The second transformer T2 is driven from T1. It also possesses an electrostatic screen, this time being connected to Guard.

### 3.13.2 180V Supply

The 180V supply is required for the gas discharge display. Bridge rectifier W1 and C6 convert the 200V AC from the secondary of T1, to DC. R6, D3, R4 and Q2 act as a constant current source being regulated by D4, R5 and Q1. The +5V line (TP2) is connected to the digital +5V line (TP3) on the Display Driver assembly.

### 3.13.3 5V Supply

All the logic circuitry to the right of the central printed circuit board is powered from the supply generated from the two 8.8 volt 750mA secondary windings on transformer T1. The centre tap (digital common) is linked directly to line ground via LK6. The output of rectifying diodes D1 and D2 is smoothed by C7 and C8 before being fed to regulator M1. This regulator is capable of 1 amp output and has foldback current limiting and thermal shut-down, to provide short circuit protection.

### 3.13.4 ±15V Supply

The output of the third secondary winding of transformer T1 (10V AC) is input to the primary of T2. The two 19.25V outputs are connected in series, with the centre tap connected to analog common. The output of bridge rectifier W2 is fed to voltage regulators M2 and M3 (wired in series), to produce positive and negative 15 volt supplies to power the analog circuitry. These regulators also include foldback current limiting and thermal shut-down, to provide short-circuit protection.

## 3.14 SELF TEST SEQUENCE

Selection of the TEST key places the instrument into a test routine, checking the display and basic measuring circuits. A flowchart for the routine is given in Fig. 3.53. The analog circuitry conditions for each test are given in the last subsection of the circuit description for the particular board, and the range 'F.E.T.' patterns in Appendix I-8.

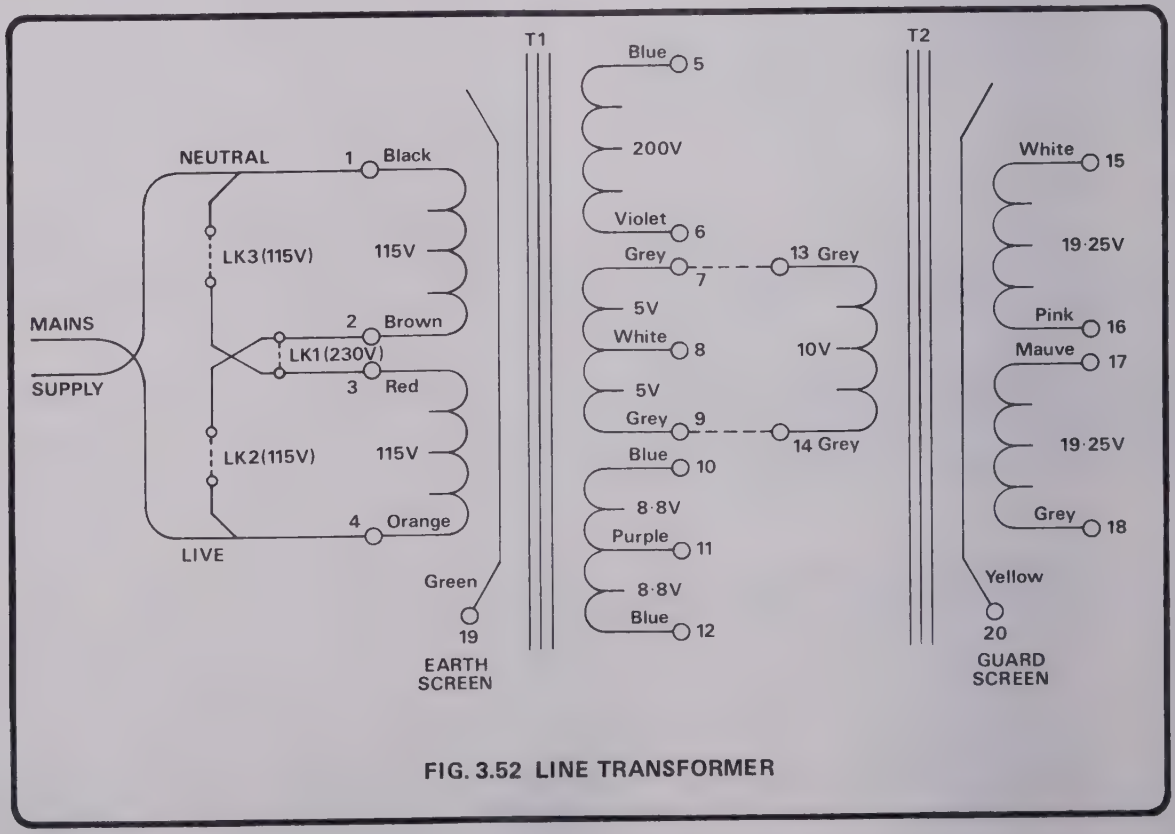



FIG. 3.52 LINE TRANSFORMER

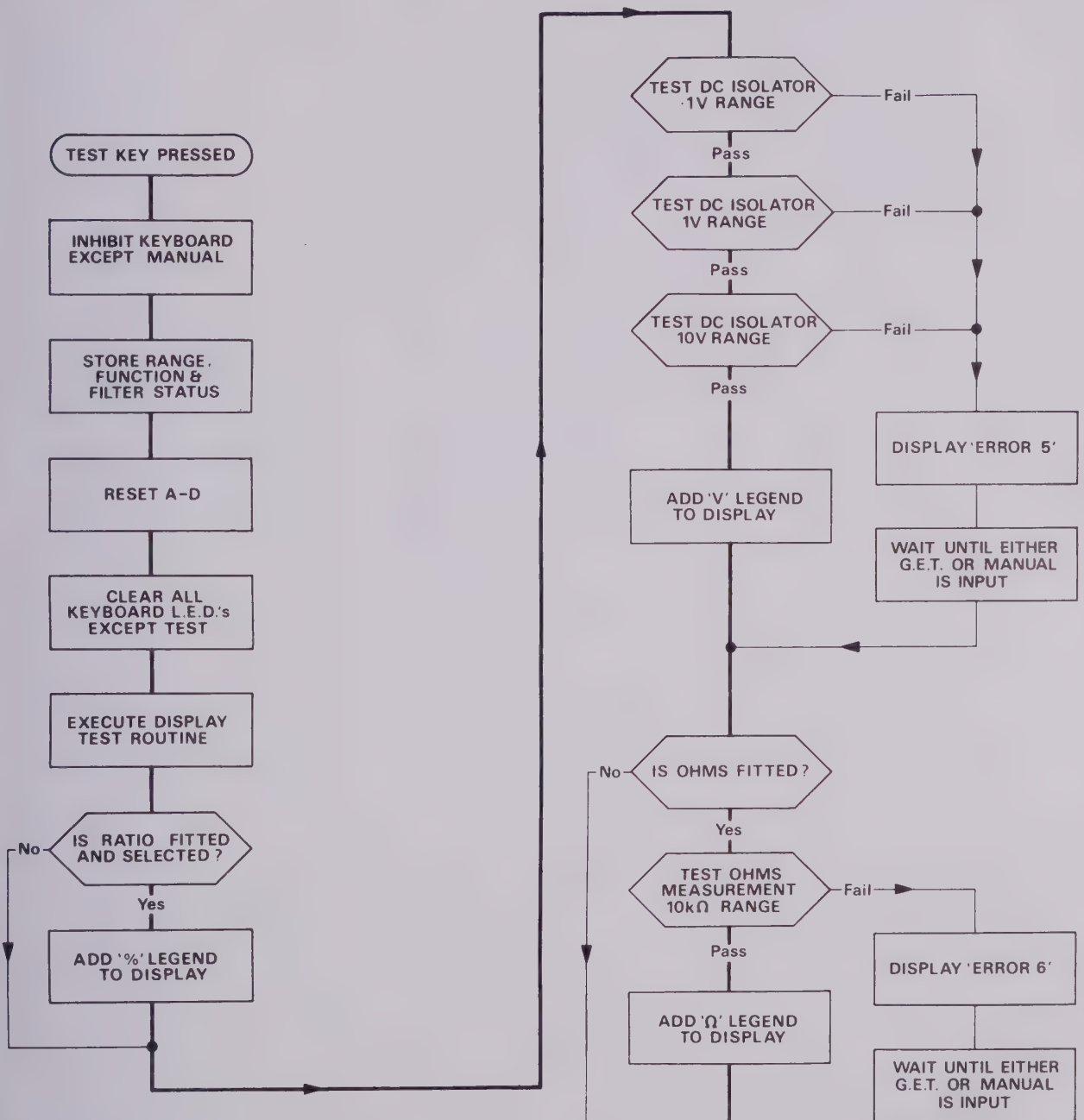
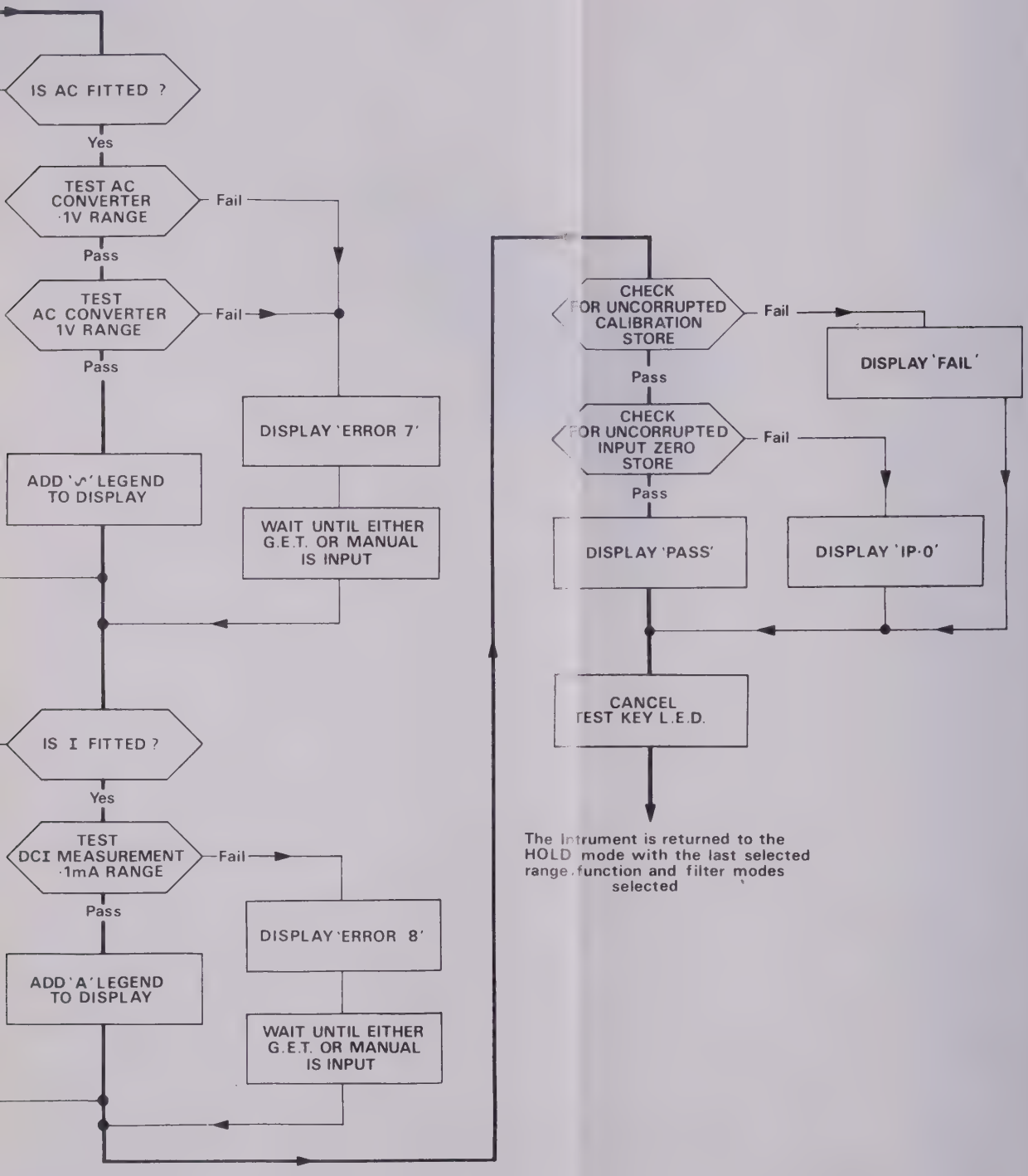



FIG. 3.53 FLOWCHART OF SELF




TEST ROUTINE

SECTION 4

# INTERNAL ADJUSTMENT PROCEDURES

## 4.1 ALTERATION OF LINE VOLTAGE AND LINE FREQUENCY

The instrument is set to 50Hz, 205V to 255V supplies unless Option 80, 81 or 82 is specified. This information is carried on the instrument identification label located on the rear panel. Alteration to a different line voltage/line frequency may necessitate an instrument recalibration.

### 4.1.1 Changing Line Voltage

1. Disconnect power and all signal input/output leads.
2. Remove the lower cover.
3. Locate the link(s) connecting the split primary on the printed circuit board in front of the toroidal line transformer, Fig. 2.1 and Drawing No 400295.
4. 115V Operation:— Remove LK1 (link 1) and fit LK2 and LK3[1].
   230V Operation:— Remove links LK2 and LK3, and fit LK1[1].
5. Amend instrument identification label.
6. Replace lower cover.
7. Replace power fuses with 160mA anti-surge (230V) or 500mA anti-surge (115V).
8. Carry out the Specification Verification tests (Section 8, User's Handbook) and recalibrate if necessary.

### 4.1.2 Changing Line Frequency

1. Disconnect power and all signal input/output leads.
2. Remove the top cover.
3. 400Hz Operation:— Remove link LK5 and fit LK7[1] on the Digital assembly, (Drawing No. 400329).
   50/60Hz Operation:— remove link LK7 and fit LK5[1] on the Digital assembly (Drawing No. 400329).
4. Place instrument into HOLD. Adjust L2 (Digital assembly) so that TP7 is 1.05V ±0.03V with respect to Digital Common (TP28).

NOTE: This signal contains about 200mV peak-to-peak high frequency noise.

5. Amend instrument identification label.
6. Replace the top cover.
7. Carry out the Specification Verification tests (Section 8, User's Handbook) and recalibrate if necessary.

[1] Links should be 22 SWG TIN.Cu wire with silicone rubber sleeving.

## 4.2 BATTERY REPLACEMENT

The battery should be replaced on or before the date indicated on the rear panel instrument identification label. To retain the calibration memory, the instrument must be powered-up during replacement. Therefore great care must be taken due to voltages up to 260 volts being present inside the instrument.

1. Remove top cover and locate battery on the Digital assembly (see Fig. 2.1).
2. Power-up instrument.
3. Desolder battery at end of tags and remove from clip.
4. Replace with new battery, (Datron Part No. 920049) positive terminal to resistor.
5. Replace top cover.
6. Amend instrument identification label (Current date + 5 years).
7. Carry out the Specification Verification tests (Section 8, User's Handbook) and recalibrate if necessary.

## 4.3 POST-REPAIR PROCEDURES

Apart from the RMS Module (which is available only from Datron), all integrated circuits and semiconductor devices are standard manufacturers' products, and special selection is unnecessary. During manufacture certain resistors are selected in value (FSV = Factory Selected Value) to accommodate circuit component tolerances, or to bring the desired setting of a preset control to the middle of its adjustment range.

The thermal tracking of the DC Preamplifier is particularly important, to ensure a low order of zero drift with variations of temperature. This rather time consuming procedure is carried out initially during manufacture, and need only be repeated following replacement of Q12 or any component associated with the temperature compensation circuitry.

NOTE: A routine calibration as detailed in Section 1 should be carried out after completion of the following procedures.

**CAUTION** : Up to 260 volts is present inside the instrument. Personal contact with these points may result in injury.

### 4.3.1 Basic DC Instrument

Equipment Requirements:

4½ digit Digital Voltmeter e.g. Datron 1041
Variable 5V, 1 amp DC supply
5mV/division Oscilloscope e.g. Telequipment D83
1MΩ5% resistor in parallel with 10nF capacitor
10MΩ5% resistor in parallel with 10nF capacitor
DC Voltage Calibrator, e.g. Datron 4000/4000A Autocal Standard.

**Procedure:**

**Power Supplies**

1. Turn instrument on and allow 5 minutes warm-up period.

2. Connect DVM Hi to TP8 and Lo to TP28 on the Digital assembly. Adjust R2 on the Rear (Power Supply) pcb assembly to give +5.100V ±25mV.

3. Connect DVM Hi to TP1 and Lo to TP20 on the Analog assembly. Adjust R7 on the Rear (Power Supply) pcb assembly to give +15.000V ±15mV.

4. Connect DVM Hi to TP2 and Lo to TP20 on the Analog assembly. Adjust R12 on the Rear (Power Supply) pcb assembly to give −15.000V ±15mV.

**Digital Assembly**

5. Switch the instrument off and disconnect the power lead.

6. Isolate the Digital Board by removing the connectors along the centre panel (J1-J5).

7. Connect variable 5V supply and DVM Hi's to TP8, Lo's to TP28. Reduce supply to 4.750V ±10mV.

8. Set R83 fully clockwise. Connect oscilloscope Lo to TP28 and monitor M53 pin 40. Turn R83 anti-clockwise until TP30 undergoes a high to low transition (or begins to pulse low).

9. Remove variable supply and reconnect items disconnected in steps 5 and 6. Disconnect the oscilloscope. Switch on the instrument.

10. Connect DVM Hi to battery positive terminal, Low to TP28. Check battery voltage is >2.5 volts.

11. Disconnect DVM and connect oscilloscope Hi to TP25, Lo to TP28. Adjust scope trigger until the trace is triggered by the first pulse of each reading burst. Adjust R11 so that the pulses occur every 5ms ± 0.5ms.

12. Place instrument into HOLD. Connect oscilloscope Hi to TP7. Adjust L2 to give a stable +1.05 ±0.03V.
NOTE: This signal contains about 200mV peak to peak high frequency noise.

13. Insert calibration key into keyswitch on the back panel and turn, placing the instrument into CAL mode.
NOTE: The display CAL legend will be lit.

14. Short together pins 'D' and 'E' on Digital assembly.
NOTE: All the calibration store correction factors are now reset to zero.

15. Turn the calibration key back to RUN mode.

**Analog Assembly (DC Isolator Section)**

16. Centralize R150 and R160.

17. Select 0.1V range DC with FILTER out. Apply a 10MΩ resistor between instrument Hi and Lo. Connect DVM Hi to TL8, Lo to TP20.
Adjust FSV R152 with a metal film resistor (50ppm/$^{o}$C) for a reading of < 10mV, using R159 for 'fine' adjustments.
Do not solder in R152.

18. Apply a short circuit across the input terminals and adjust R150 for a reading of < 50μV at TP13.

19. Connect DVM Hi to TP33 and adjust R160 for a reading of <20μV.

20. Repeat steps 17 to 19 until readings are within specified limits.

NOTE: The following step is only required after the replacement of Q12 or any component associated with the temperature compensation circuitry.

21. (i) Re-apply 10MΩ resistor across the input terminals. Note the reading on the front panel display (=A).
    (ii) Note the ambient temperature (=X$^{o}$C).
    (iii) Place the instrument in a temperature controlled oven at approx 50$^{o}$C without top cover and with power 'on'.
    (iv) Leave the instrument for at least 1 hour then note the reading on the display (=B) and the temperature of the oven (=Y$^{o}$C).
    (v) Compute (B−A)/(Y−X) = Drift/$^{o}$C.
    (vi) Remove instrument from oven and allow to stabilize, with power 'on' to ambient for one hour.
    (vii) If the drift was <10 digits/$^{o}$C proceed to (x).
    (viii) For drifts in excess of 10 digits/$^{o}$C R151 must be adjusted. If the drift was positive turn R151 clockwise, if negative turn R151 anti-clockwise.
    (ix) Repeat from (i).
    (x) Lock R151 with a clean soldering iron.
    (xi) Repeat steps 17 to 20.

22. Solder in R152, with instrument turned off.

**Analog Assembly (A-D Converter)**

23. Select 100V range and apply short circuit between Hi and Lo. Connect DVM Hi to TP7, Lo to TP20. If reading is +6.42V ±0.03V proceed to step 25.

24. Switch off instrument and make positive reference links B & C, if cut i.e. the links alongside TP7. Switch on instrument and measure voltages on TP7 once again. Consult Fig. 4.1 and cut links as indicated. Repeat step 23.

| Voltage on TP7 or TP8 | TL'B' | TL'C' |
|---|---|---|
| 6.42 | – | – |
| 6.47 | – | ✓ |
| 6.525 | ✓ | – |
| 6.58 | ✓ | ✓ |

Select voltage closest to measured value and cut links

**FIG 4.1 REFERENCE SELECTION VOLTAGES**

25. Connect DVM Hi to TP8. If reading is -6.42V ± 0.03V proceed to step 27.

26. Switch off instrument and make negative reference links A to C, if cut i.e. the links alongside TP8. Switch on instrument and measure voltage on TP8 once again. Consult Fig 4.1 and cut links as indicated. Repeat Step 25.

27. Select HOLD. Connect DVM Hi to TP9. Select correct resistance value for FSV R11 or R15 to give a reading of 0V ±1mV. Solder in resistor.

28. Deselect HOLD and disconnect DVM. Select 1000V range and apply +19mV. Connect oscilloscope Lo to TP21, Hi to TP5. Adjust R20 for noisy waveform at zero point.

29. Remove oscilloscope. Replace covers but do not replace screws. Select 1V, DC, filter out and apply 1MΩ across input terminals. Turn rear panel keyswitch to CAL mode and select LIN.

30. Select .1V range and apply 10MΩ across input terminals. Select Ib. Repeat until display reads less than 50 digits.

31. Select 10V range, FILTER and apply short copper link across input terminals. Select ZERO.

32. Apply +10 volts and select GAIN. Repeat until display reads +10.0000 ± ½ digit.

33. Apply +19 volts. If the display reads within the limits +18.9999 to +19.0001, proceed to step 35.

34. Calculate E = (19 - displayed reading)/2.
Re-apply +10 volts and adjust R23 for a displayed reading of 10 - E.
Repeat steps 32-34 until both readings are within the limits indicated.

35. Turn rear panel keyswitch to RUN mode.

The basic DC only instrument set-up procedure is complete.

**4.3.2 Ohms Assembly**

Equipment Required:
5½ digit DVM, e.g. Datron 1065, or 1061.
10 Megohm 5% resistor in parallel with a 10nF capacitor, e.g. Datron Part No. 400392.
Copper shorting links, and a short wire link.

**Procedure.**

1. Select 10 kilohm range, 4-wire. Connect I– to Ohms Guard, I+ to Hi, and 10 Megohm resistor between Hi and Lo.

2. Connect DVM Hi to TP4, Lo to TP1 and adjust R26 (bias current) for a reading of Zero ± 300μV.

3. Disconnect the 10 Megohm resistor, and connect a copper shorting link in its place between Hi and Lo.

4. Transfer DVM Hi from TP4 to TP14, and adjust R27 (Q10 offset) for Zero ± 2μV.
N.B. Ensure that the DVM used for measurement is correctly zeroed!

5. Repeat steps 1-4 until the readings are within the specified limits.

6. Connect Lo to Ohms Guard. Connect a shorting link between TP1 and TP3.

7. Transfer DVM Hi from TP14 to TP13, and check that the reading is zero ± 50μV.
If reading > +50μV, reselect FSV resistor R40 to bring the reading within limits.
If reading < –50μV, reselect FSV resistor R39 to bring the reading within limits.
NB R39 and R40 must each be at least 100 kilohms.

8. Remove the link from TP1 and TP3. Disconnect the DVM leads, and the connections from the front panel.

The basic Ohms set-up procedure is now complete.

### 4.3.3 OPTION 10 AC Assembly

Equipment Required:

5mV/Div oscilloscope. e.g. Telequipment D83.
5½ digit DVM with Ohms. e.g. Datron 1065, 1061.
DC calibrator. e.g. Datron 4000 or 4000A.
AC calibrator. e.g. Datron 4200.
Asymmetric signal, 1V RMS, Crest Factor 5:1 ±0.02%, reversible polarity.

**Procedure**

1. Select AC 1000V range and HOLD. Short Hi to Lo. Connect DVM Hi to TL7, Lo to TP8 and note reading. Select 1V range and adjust R121 (bias current) to give same reading ±10μV.

2. Select 100mV range, AC + DC and adjust R112 (offset adjust) for an indication of zero ±50μV on the DVM.

3. Repeat steps 1. and 2. until readings are within the specified limits.

4. Select 10V range and HOLD. Connect oscilloscope Hi to TP5, Lo to TP8 and adjust R90 (rectifier zero) for maximum noise about zero. Remove the oscilloscope.

5. Connect DVM Hi to TP2, Lo to TP8 and adjust R75 (linearity) for an indication on the DVM of 1.8mV ±10%.

6. Select AC, 1V range, FILTER and apply 1V 500Hz. Connect DVM Hi to TL5, Lo to TP8. If reading is +3.157V ±0.01V proceed to step 8.

7. Disconnect input signal and switch off instrument, Make links TL1 to TL4 if cut. Switch on instrument, reselect AC, 1V range, FILTER and reapply 1V, 500Hz. Measure voltage on TL5. Consult Fig. 4.2 and cut links as indicated. Check voltage on TL5 is 3.157V ±0.01V. Remove the DVM.

8. Deselect HOLD and short circuit instrument Hi and Lo. Turn rear panel key switch to CAL mode and select ZERO. Repeat for all ranges.

9. Select 1V range. Apply 1 volt (d.c.) and note reading on display. Apply −1 volt (d.c.) and adjust R50 (d.c. turnover) for same display indication ±10 digits.

10. This part of the procedure must be performed with the high frequency compensation voltage, at J1-11/R57, at −5V ±0.2V.

    a. Select AC 100V range, FILTER and apply 100V, 500Hz. Select GAIN. Apply 100V, 50kHz and adjust C62 for a display of 100.000V ±20 digits.

    b. Apply 100V, 100kHz note error and adjust C61 to double the displayed error in the same direction.

    c. Repeat a. and b. until 50kHz and 100kHz displays are within ±20 digits.

    d. Select 1V range and apply 1 volt, 500 Hz. Select GAIN. Apply 1V 50kHz and adjust C63 for a display of 1.00000V ±20 digits.

11. Apply 1 volt 5:1 crest factor signal. Adjust R35 (crest factor) for a display of 1.00000V ±30 digits.

12. Open circuit input. Turn rear panel key switch to RUN. Select TEST and check for a display of PASS. Turn rear panel key switch to CAL.

13. Select 10V range and apply 10V, 50kHz. Check display is 10.0000V ±1200 digits. Check that the display can be calibrated to 10.0000 ±20 digits by less than 5 presses of the AC HF key.

14. Select 100mV range and apply 100mV 50kHz. Check display is 100.000mV ±500 digits. Check that display can be calibrated to 100.000mV ±20 digits by less than 5 presses of the AC HF key.

15. Select 1000V range and apply 1000V, 500Hz. Select GAIN.

16. Apply 1000V, 25kHz and check display is 1000.00V ±1200 digits. Check that display can be calibrated to 1000.00V ±20 digits by less than 5 presses of the AC HF key. Remove 1000V and turn rear panel key switch to RUN.

The basic AC set-up procedure is complete.

| Voltage on TL5 | TL1 | TL2 | TL3 | TL4 |
|---|---|---|---|---|
| 3.157 | – | – | – | – |
| 3.178 | – | – | – | ✓ |
| 3.198 | – | – | ✓ | – |
| 3.218 | – | – | ✓ | ✓ |
| 3.239 | – | ✓ | – | – |
| 3.259 | – | ✓ | – | ✓ |
| 3.280 | – | ✓ | ✓ | – |
| 3.300 | – | ✓ | ✓ | ✓ |
| 3.320 | ✓ | – | – | – |
| 3.340 | ✓ | – | – | ✓ |
| 3.360 | ✓ | – | ✓ | – |
| 3.380 | ✓ | – | ✓ | ✓ |
| 3.400 | ✓ | ✓ | – | – |
| 3.420 | ✓ | ✓ | – | ✓ |
| 3.440 | ✓ | ✓ | ✓ | – |
| 3.460 | ✓ | ✓ | ✓ | ✓ |

Select voltage closest to measured value and cut links

**FIG 4.2 OPTION 10 AC ASSEMBLY OUTPUT SELECTION VOLTAGES**

### 4.3.4 OPTION 12 AC Assembly

Equipment Required:

5mV/Div oscilloscope. e.g. Telequipment D83.
5½ digit DVM with Ohms. e.g. Datron 1065, 1061.
DC calibrator. e.g. Datron 4000 or 4000A.
AC calibrator. e.g. Datron 4200.
Asymmetric signal, 1V RMS, Crest Factor 5:1 ±0.02%, reversible polarity.

**CAUTION**
The following procedures should commence with the HF Autocal voltage close to the center of its span. To check this, select the 100V AC range and measure the DC voltage at J1-11 with respect to TP8. If it is between +4V and +6V, it is NOT necessary to clear the calibration stores. If outside these limits, the cal stores should be cleared as described in para 4.3.1 operations (13), (14) and (15).

CLEARING THE CAL STORES ENTAILS A FULL 'AUTOCAL' OF THE INSTRUMENT!

Before proceeding; ensure that at least the Analog Assembly LIN and $I_b$ Autocalibrations have been carried out.

**AC Preamplifier Zero**

1. Read and comply with the CAUTION above.

2. Apply short circuit input. Select AC + DC, 100mV range and HOLD.

3. Connect DVM Lo to TP8, Hi to Test link K (TLK). Adjust R148 (bias current) for a reading of zero, ±140μV.

4. Select 100mV range AC, and check that the reading is zero, ±140μV. It may be necessary to re-adjust R148 to obtain this value. If so, recheck operation 3.

5. Select each range in turn, and check that the DVM reading is within ±70μV of zero (except 100mV range: ±140μV).

**Set up RMS Converter**

6. Select 10V range. Adjust R119 (Rectifier zero) for the most negative (or least positive) reading on the display.

7. Connect DVM to TLH. Adjust R101 (linearity) for a reading of +1.1mV±10%.

8. Select 100mV range. Check that the DVM reading is between 0.8mV and 1.8mV.

9. Select 1V range and apply 1V, 500Hz, with the DVM still connected to TLH. Remake links TLC-TLF. Then after recording the TLH voltage, refer to Fig. 4.2 and cut the links (✓) as appropriate to give a DVM reading of 3.157V ±0.010V.

| TLH Voltage | Cut Test Links C | D | E | F | Gain* |
|---|---|---|---|---|---|
| 2.887 - 2.904 | ✓ | ✓ | ✓ | ✓ | 1.090 |
| 2.904 - 2.920 | ✓ | ✓ | ✓ | x | 1.084 |
| 2.920 - 2.937 | ✓ | ✓ | x | ✓ | 1.078 |
| 2.937 - 2.954 | ✓ | ✓ | x | x | 1.072 |
| 2.954 - 2.973 | ✓ | x | ✓ | ✓ | 1.065 |
| 2.973 - 2.988 | ✓ | x | ✓ | x | 1.059 |
| 2.988 - 3.004 | ✓ | x | x | ✓ | 1.054 |
| 3.004 - 3.021 | ✓ | x | x | x | 1.048 |
| 3.021 - 3.038 | x | ✓ | ✓ | ✓ | 1.042 |
| 3.038 - 3.055 | x | ✓ | ✓ | x | 1.036 |
| 3.055 - 3.071 | x | ✓ | x | ✓ | 1.031 |
| 3.071 - 3.090 | x | ✓ | x | x | 1.025 |
| 3.090 - 3.110 | x | x | ✓ | ✓ | 1.018 |
| 3.110 - 3.128 | x | x | ✓ | x | 1.012 |
| 3.128 - 3.147 | x | x | x | ✓ | 1.006 |
| 3.147 - 3.167 | x | x | x | x | 1.000 |

*Increase in TLH voltage when links are cut.

**FIG. 4.3 OPTION 12 AC ASSEMBLY OUTPUT SELECTION VOLTAGES**

**Check Spec Readout Frequency Flags**

10. Select HOLD. Connect DVM to TP6. Adjust the applied frequency and note that TP6 changes logic state at a frequency between 1.8kHz and 2.2kHz. Disconnect the DVM.

**Set Range 'Zeros'**

11. Deselect HOLD, and apply 500Hz at 0.1% FR input to each range in turn. Perform ZERO autocal on each range, using the instrument display to check that each range calibrates to 100 digits ±3 digits. Disconnect the input.

12. Apply a short circuit to the input, short Guard to Lo and select each range in turn. Check that the reading on each range is zero ±10 digits on the display (except 100mV range ±30 digits). Remove the shorts.

**Set up DC-DC Turnover**

13. Select 1V range, AC + DC. Apply 1V 500Hz and perform GAIN autocal.

14. Apply +1V DC and note the displayed reading.

15. Apply −1V DC and adjust R62 (DC turnover) for the same reading as in operation (14). (±3 digits).

16. Repeat (13) to (15) until all readings are the same to within ±20 digits.

**Set up Coarse Frequency Response**

17. Select 100V range, AC; apply 100V, 500Hz and perform GAIN autocal. Apply 100V, 50kHz and adjust C82 for a display reading of 100.000V ±20 digits. (If necessary change C81 to a value which permits this adjustment).

18. Apply 100V, 100kHz and note the reading error. Adjust C79 to give 5 times the error in the same direction.

19. Repeat (17) and (18) until the 50kHz and 100kHz readings are separated by less than 20 digits.

20. Select 1V range, AC; apply 1V, 500Hz and perform GAIN autocal. Apply 1V, 50kHz and adjust C84 for a display reading of 1.00000V ±20 digits. (If necessary change C85 to a value which permits this adjustment).

**Set up Crest Factor**

21. Apply 1VRMS, +ve 5:1 Crest Factor signal. Adjust R61 (crest factor) for a display reading of 1.00000V ±30 digits.

22. Apply 1VRMS, −ve 5:1 Crest Factor signal. Check that display reading is 1.00000V ±30 digits.

23. Apply 1V, 500Hz, and perform GAIN Autocal. Repeat (21), (22) and (23) until crest factor readings are within limits.

**Linearity Checks**

24. Select 1V range, AC + DC. Apply 1V DC and perform GAIN Autocal.

25. Apply 1.9V DC and adjust R27 value (Factory Selected Value - FSV) for a display reading of 1.90000V ±6 digits (reducing R27 increases reading).

26. Repeat (24) and (25) until both correct.

27. Select 1V range AC. Apply in turn 1V, 100mV, 10mV, at 500Hz and check that display reading is correct to within ±10 digits of the input voltage.

28. Apply open circuit input, set CAL/RUN switch to RUN; press 'Test' and check for a display of 'PASS'.

**Output Buffer Check**

29. Select 1V range, AC + DC, no filter. Apply 1V DC and set CAL switch to RUN. Use the 'A-B' computation mode to null out the reading: press STORE, B, then (A-B).

30. Select filter, and leave to settle for at least 30 seconds. Check that the displayed reading is within ±50 digits of zero.

31. Repeat (28).

The AC set-up procedure is now complete.

# APPENDIX 1

## ANALOG DATA LINE 'F.E.T.' PATTERNS

DC Voltage

| Range | | DC Isolator | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | AD0 | AD1 | AD2 | AD3 | AD4 | AD5 | AD6 | AD7 |
| 1 | 100mV | 0 | 0 | 0 | 0 | 0 | 1 | 1 | X |
| 2 | 100mV | 0 | 0 | 0 | 0 | 0 | 1 | 1 | X |
| 3 | IV | 0 | 0 | 0 | 0 | 1 | 1 | 1 | X |
| 4 | 10V | 0 | 0 | 0 | 0 | 1 | 0 | 1 | X |
| 5 | 100V | 0 | 0 | 0 | 0 | 1 | 1 | 0 | X |
| 6 | 1000V | 0 | 0 | 0 | 0 | 1 | 0 | 0 | X |
| 7 | 1000V | 0 | 0 | 0 | 0 | 1 | 0 | 0 | X |

AC Voltage

| Range | | AC assembly | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | AD0 | AD1 | AD2 | AD3 | AD4 | AD5 | AD6 | AD7 |
| 1 | 100mV | 0 | 0 | 1 | 0 | 0 | 0 | 1 | X |
| 2 | 100mV | 0 | 0 | 1 | 0 | 0 | 0 | 1 | X |
| 3 | 1V | 0 | 0 | 1 | 0 | 0 | 0 | 0 | X |
| 4 | 10V | 0 | 0 | 0 | 1 | 0 | 0 | 0 | X |
| 5 | 100V | 0 | 0 | 0 | 0 | 1 | 0 | 0 | X |
| 6 | 1000V | 0 | 0 | 0 | 0 | 0 | 1 | 0 | X |
| 7 | 1000V | 0 | 0 | 0 | 0 | 0 | 1 | 0 | X |

DC Coupled AC Voltage

| Range | | AC assembly | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | AD0 | AD1 | AD2 | AD3 | AD4 | AD5 | AD6 | AD7 |
| 1 | 100mV | 0 | 1 | 1 | 0 | 0 | 0 | 1 | X |
| 2 | 100mV | 0 | 1 | 1 | 0 | 0 | 0 | 1 | X |
| 3 | 1V | 0 | 1 | 1 | 0 | 0 | 0 | 0 | X |
| 4 | 10V | 0 | 1 | 0 | 1 | 0 | 0 | 0 | X |
| 5 | 100V | 0 | 1 | 0 | 0 | 1 | 0 | 0 | X |
| 6 | 1000V | 0 | 1 | 0 | 0 | 0 | 1 | 0 | X |
| 7 | 1000V | 0 | 1 | 0 | 0 | 0 | 1 | 0 | X |

Ohms

| Range | DC Isolator | | | | | | | | Ohms assembly | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | AD0 | AD1 | AD2 | AD3 | AD4 | AD5 | AD6 | AD7 | AD0 | AD1 | AD2 | AD3 | AD4 | AD5 | AD6 | AD7 |
| 1 10Ω | 0 | 0 | 0 | 0 | 0 | 1 | 1 | X | 0 | 0 | 0 | 0 | 0 | 0 | 1 | X |
| 2 100Ω | 0 | 0 | 0 | 0 | 1 | 1 | 1 | X | 0 | 0 | 0 | 0 | 0 | 0 | 1 | X |
| 3 1kΩ | 0 | 0 | 0 | 0 | 1 | 1 | 1 | X | 0 | 0 | 0 | 0 | 0 | 1 | 0 | X |
| 4 10kΩ | 0 | 0 | 0 | 0 | 1 | 1 | 1 | X | 1 | 0 | 0 | 0 | 0 | 0 | 0 | X |
| 5 100kΩ | 0 | 0 | 0 | 0 | 1 | 1 | 1 | X | 0 | 0 | 0 | 0 | 1 | 0 | 0 | X |
| 6 1MΩ | 0 | 0 | 0 | 0 | 1 | 1 | 1 | X | 0 | 0 | 1 | 1 | 0 | 0 | 0 | X |
| 7 10MΩ | 0 | 0 | 0 | 0 | 1 | 1 | 1 | X | 0 | 1 | 0 | 1 | 0 | 0 | 0 | X |

DC Current

| Range | DC Isolator | | | | | | | | Current assembly | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | AD0 | AD1 | AD2 | AD3 | AD4 | AD5 | AD6 | AD7 | AD0 | AD1 | AD2 | AD3 | AD4 | AD5 | AD6 | AD7 |
| 1 100μA | 0 | 0 | 0 | 0 | 0 | 1 | 1 | X | 0 | 1 | 0 | 0 | 0 | 0 | 1 | X |
| 2 100μA | 0 | 0 | 0 | 0 | 0 | 1 | 1 | X | 0 | 1 | 0 | 0 | 0 | 0 | 1 | X |
| 3 1mA | 0 | 0 | 0 | 0 | 0 | 1 | 1 | X | 1 | 0 | 0 | 0 | 0 | 0 | 1 | X |
| 4 10mA | 0 | 0 | 0 | 0 | 0 | 1 | 1 | X | 1 | 1 | 1 | 0 | 0 | 0 | 1 | X |
| 5 100mA | 0 | 0 | 0 | 0 | 0 | 1 | 1 | X | 1 | 1 | 0 | 1 | 0 | 0 | 1 | X |
| 6 1A | 0 | 0 | 0 | 0 | 0 | 1 | 1 | X | 1 | 1 | 0 | 0 | 1 | 0 | 1 | X |
| 7 1A | 0 | 0 | 0 | 0 | 0 | 1 | 1 | X | 1 | 1 | 0 | 0 | 1 | 0 | 1 | X |

AC Current

| Range | AC assembly | | | | | | | | Current assembly | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | AD0 | AD1 | AD2 | AD3 | AD4 | AD5 | AD6 | AD7 | AD0 | AD1 | AD2 | AD3 | AD4 | AD5 | AD6 | AD7 |
| 1 100μA | 0 | 0 | 1 | 0 | 0 | 0 | 1 | X | 0 | 1 | 0 | 0 | 0 | 1 | 0 | X |
| 2 100μA | 0 | 0 | 1 | 0 | 0 | 0 | 1 | X | 0 | 1 | 0 | 0 | 0 | 1 | 0 | X |
| 3 1mA | 0 | 0 | 1 | 0 | 0 | 0 | 1 | X | 1 | 0 | 0 | 0 | 0 | 1 | 0 | X |
| 4 10mA | 0 | 0 | 1 | 0 | 0 | 0 | 1 | X | 1 | 1 | 1 | 0 | 0 | 1 | 0 | X |
| 5 100mA | 0 | 0 | 1 | 0 | 0 | 0 | 1 | X | 1 | 1 | 0 | 1 | 0 | 1 | 0 | X |
| 6 1A | 0 | 0 | 1 | 0 | 0 | 0 | 1 | X | 1 | 1 | 0 | 0 | 1 | 1 | 0 | X |
| 7 1A | 0 | 0 | 1 | 0 | 0 | 0 | 1 | X | 1 | 1 | 0 | 0 | 1 | 1 | 0 | X |

DC Coupled AC Current

| Range | AC assembly | | | | | | | | Current assembly | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | AD0 | AD1 | AD2 | AD3 | AD4 | AD5 | AD6 | AD7 | AD0 | AD1 | AD2 | AD3 | AD4 | AD5 | AD6 | AD7 |
| 1 100μA | 0 | 1 | 1 | 0 | 0 | 0 | 1 | X | 0 | 1 | 0 | 0 | 0 | 1 | 0 | X |
| 2 100μA | 0 | 1 | 1 | 0 | 0 | 0 | 1 | X | 0 | 1 | 0 | 0 | 0 | 1 | 0 | X |
| 3 1mA | 0 | 1 | 1 | 0 | 0 | 0 | 1 | X | 1 | 0 | 0 | 0 | 0 | 1 | 0 | X |
| 4 10mA | 0 | 1 | 1 | 0 | 0 | 0 | 1 | X | 1 | 1 | 1 | 0 | 0 | 1 | 0 | X |
| 5 100mA | 0 | 1 | 1 | 0 | 0 | 0 | 1 | X | 1 | 1 | 0 | 1 | 0 | 1 | 0 | X |
| 6 1A | 0 | 1 | 1 | 0 | 0 | 0 | 1 | X | 1 | 1 | 0 | 0 | 1 | 1 | 0 | X |
| 7 1A | 0 | 1 | 1 | 0 | 0 | 0 | 1 | X | 1 | 1 | 0 | 0 | 1 | 1 | 0 | X |

TEST

| Function Tested | Range Checked | DC Isolator | | | | | | | | Option assembly | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | AD0 | AD1 | AD2 | AD3 | AD4 | AD5 | AD6 | AD7 | AD0 | AD1 | AD2 | AD3 | AD4 | AD5 | AD6 | AD7 |
| DC | .1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | | | | | | | | |
| | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 1 | | | | | | | | |
| | 10 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | | | | | | | | |
| kΩ | 10 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | Ohms assembly<br>0 | 1 | 0 | 1 | 0 | 0 | 0 | 1 |
| AC | .1 | Not used | | | | | | | | AC assembly<br>0 | 1 | 1 | 0 | 0 | 0 | 1 | 0 |
| | 1 | | | | | | | | | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 |
| I | .1 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | I assembly<br>0 | 1 | 0 | 0 | 0 | 0 | 1 | 1 |

| DESIGNATOR | DATRON PART No | DESCRIPTION | PRINCIPAL MANUFACTURER | MANUFACTURER'S PART No | No. USED Per Assy |
|---|---|---|---|---|---|
| R1 | 090001 | P.T.C. THERMISTOR | MULLARD | VA8650 | 2 |
| R2 | 090001 | P.T.C. THERMISTOR | MULLARD | VA8650 | — |
| R3 | 000102 | 1k 1/4 W CARBON | MULLARD | CR25 | 10 |
| R4 | 000102 | 1k " - " | " | " | — |
| R5 | 000102 | 1k " - " | " | " | — |
| R6 | 000102 | 1K 1/4 W. CARBON | " | CR25 | — |
| R7 | 000104 | 100K 1/4 W. CARBON | MULLARD | CR25 | 1 |
| R8 | 000102 | 1k 1/4 W. CARBON | MULLARD | CR25 | — |
| R9 | 000102 | 1K " - " | " | " | — |
| R10 | 000102 | 1k " " " | " | " | — |
| R11 | 000102 | 1k " " " | " | " | — |
| R12 | 000102 | 1k " " " | " | " | — |
| R13 | 000102 | 1K " " " | " | " | — |
| R14 | 000472 | 4K7 " " " | " | " | 1 |
| | | | | | |
| AN1 | 090031 | 1k x7 2% NETWORK | BECKMAN | L08 - 1 - R1k | 2 |
| AN2 | 090031 | " " " " | " | " | — |
| | | | | | |
| C1 | 102101 | 100PF CER DISC | ERIE | 801 | 1 |
| C2 | 150002 | 10μF 20% 16V DIP TANT | UNION CARBIDE | K10E16 | 2 |
| C3 | 150016 | 1.0 μF 20% 35V " | UNION CARBIDE | K1R0E35 | 2 |
| C4 | 101103 | 0.01μF 250V CER DISC | ERIE | 801 | 3 |

NOTES.

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| | 11 | 12 | 13 |
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| | 1661 | 1815 | 1823 |
| | 10.9.84 | 10.1.85 | 23-1-85 |
| | MD | MD | MD |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ECO | - | - | RELEASED | ECO 778 | 816/818 | 867 | 888 | 1N1 | 1213 | 1352 | 1472 | 1662 |
| DATE | - | 17-8-78 | 29-9-78 | 6-12-78 | 26-JAN-79 | 11 JUN 79 | 26 OCT 79 | 21.4.80 | 11-6-81 | 1.7.82 | 2.6.83 | 6.8.84 |
| CHKD | - | MD | MD | MD | MD | MD | MD | MD | MD | MD | MD | MD |

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TITLE 1061/1071/1081 FRONT P.C.B. ASSY

DRAWING NUMBER 400294 SHEET 2 OF 6

| DESIGNATOR | DATRON PART No. | DESCRIPTION | PRINCIPAL MANUFACTURER | MANUFACTURER'S PART No. | No. USED Per Assy |
|---|---|---|---|---|---|
| C5 | 101103 | 0.01μF. 250v CER DISC | ERIE | 801 | — |
| C6 | 150016 | 1.0 μF 20% 35V DIP TANT | UNION CARBIDE | K1R0E35 | — |
| C7 | 101103 | 0.01μF 250V CER DISC | ERIE | 801 | — |
| C8 | 150002 | 10μF 20% 16V. DIP TANT | UNION CARBIDE | K10E16 | — |
| C9 | 104023 | 2n2F 20% 1KV. CER DISC | ITT | HD16K102N2MS-SSIK0DSC | 1 |
| C10 | | NOT USED | | | |
| C11 | 150006 | 4μ7 20% 16V DIP TANT | UNION CARBIDE | K4R7E16 | 1 |
| | | | | | |
| | | | | | |
| | | | | | |
| Q1 | 240001 | Si NPN | NATIONAL | BC184K | 6 |
| Q2 | 240001 | Si NPN | NATIONAL | BC184K | — |
| Q3 | 240001 | " " | " | " | — |
| Q4 | 240001 | " " | " | " | — |
| Q5 | 240001 | " " | " | " | — |
| Q6 | 240001 | " " | " | " | — |
| | | | | | |
| | | | | | |
| | | | | | |
| M1 | 290042 | G.P. HIGH CURRENT TRANS ARRAY | R.C.A. | CA3081P | 3 |
| M2 | 280011 | DUAL D FLIP-FLOP | MOTOROLA | MC14013 BCP | 1 |
| M3 | 290042 | G.P. HIGH CURRENT TRANS ARRAY | R.C.A | CA3081P | — |
| M4 | 280015 | QUAD D REGISTER | MOTOROLA | MC14076 BCP | 7 |

NOTES

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TITLE 1061/71/81 FRONT. P.C.B ASSY.

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| DESIGNATOR | DATRON PART No | DESCRIPTION | PRINCIPAL MANUFACTURER | MANUFACTURER'S PART No | No. USED Per Assy |
|---|---|---|---|---|---|
| I-15 | 280015 | QUAD D RESISTER | MOTOROLA | MC14076BCP | — |
| I-16 | 280015 | QUAD D REGISTER | MOTOROLA | MC14076BCP | — |
| I-17 | 280067 | 16 WAY KEYBOARD ENCODER | NATIONAL | MM74C922 | 2 |
| I-18 | 280015 | QUAD D REGISTER | MOTOROLA | MC14076BCP | — |
| I-19 | 280015 | QUAD D REGISTER | MOTOROLA | MC14076BCP | — |
| I-10 | 280067 | 16 WAY KEYBOARD ENCODER | NATIONAL | MM74C922 | — |
| I-11 | 280015 | QUAD D REGISTER | MOTOROLA | MC14076BCP | — |
| I-12 | 280015 | QUAD D REGISTER | MOTOROLA | MC14076BCP | — |
| I-13 | 290042 | G.P. HIGH CURRENT TRANS ARRAY | RCA | CA3081E | — |
| S1 | 700019 | SLIDE SWITCH | SIEMENS | C-42315-A60-A1 | 2 |
| S2 | 700019 | " | " | " | — |
| S3 | 700061 | KEYBOARD SWITCH. RED LED | SCHADOW | SRL-RED LED | 24 |
| S4 | 700061 | " | " | " | — |
| S5 | 700061 | " | " | " | — |
| S6 | 700061 | " | " | " | — |
| S7 | 700061 | " | " | " | — |
| S8 | 700061 | " | " | " | — |
| S9 | 700061 | " | " | " | — |
| S10 | 700062 | KEYBOARD SWITCH GREEN LED | SCHADOW | SRL-GREEN LED | 2 |

NOTES.

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SHEET 4 OF 6

| DESIGNATOR | DATRON PART No. | DESCRIPTION | PRINCIPAL MANUFACTURER | MANUFACTURER'S PART No | No. USED Per Assy |
|---|---|---|---|---|---|
| S11 | 700061 | KEYBOARD. SWITCH. RED. LED. | SCHADOW | SRL - RED LED | — |
| S12 | 700061 | " " " " | " | " " " | — |
| S13 | 700061 | " " " " | " | " " " | — |
| S14 | 700061 | " " " " | " | " " " | — |
| S15 | 700061 | " " " " | " | " " " | — |
| S16 | 700061 | " " " " | " | " " " | — |
| S17 | 700061 | " " " " | " | " " " | — |
| S18 | 700061 | " " " " | " | " " " | — |
| S19 | 700061 | " " " " | " | " " " | — |
| S20 | 700061 | " " " " | " | " " " | — |
| S21 | 700061 | " " " " | " | " " " | — |
| S22 | 700061 | " " " " | " | " " " | — |
| S23 | 700061 | " " " " | " | " " " | — |
| S24 | 700061 | " " " " | " | " " " | — |
| S25 | 700061 | " " " " | " | " " " | — |
| S26 | 700061 | " " " " | " | " " " | — |
| S27 | 700061 | " " " " | " | " " " | — |
| S28 | 700062 | KEYBOARD SWITCH. GREEN. LED. | SCHADOW | SRL-GREEN LED | — |

NOTES

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TITLE 1061/71/81 FRONT P.C.B. ASSY

DRAWING NUMBER 400294

SHEET 5 OF 6

| DESIGNATOR | DATRON PART No. | DESCRIPTION | PRINCIPAL MANUFACTURER | MANUFACTURER'S PART No. | No. USED Per Assy. |
|---|---|---|---|---|---|
| | 400573-4 | SIGNAL CABLE ASSY | | | 1 |
| | 450451-2 | RM10 INSULATOR. | | | 1 |
| | 410090-7 | PRINTED CIRCUIT BOARD | | | 1 |
| | 450179-1 | TERMINAL PLATE. | | | 1 |
| | 605060 | IC. SOCKET 14 WAY | JERMYN | J23-18014 | 1 |
| | 605061 | IC. SOCKET 16 WAY | JERMYN | J23-18016 | 10 |
| | 605062 | IC. SOCKET 18 WAY | JERMYN | J23-18018 | 2 |
| | 630099 | MASKING TAPE | 3M | | A/R |
| | 630024 | INSULATING BEADS | | | 8 |
| | 800017 | 8½ DIGIT DISPLAY | DALE | | 1 |
| | 920015 | Low. E.M.F. TERM. BLK/BLK | CLIFF | TPI - SPECIAL | 1 |
| | 920041 | " " " BLK/RED | CLIFF | " " | 1 |
| | 920042 | NOT Low E.M.F. TERM BLK/WH | " | TPI | 1 |
| | 920043 | " " " " BLK/BRN | " | " | 1 |
| | 920044 | " " " " BLK/BLUE | " | " | 1 |
| | 920045 | " " " " BLK/YELLOW | " | " | 1 |
| | 630029 | DOUBLE SIDED PRESSURE SENSITIVE TAPE. | 3M | TYPE 4032 | 290mm |
| | 420080-1 | WARNING LABEL | | | 1 |
| | | | | | |
| | | | | | |
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| APPROVED | |
| DATE | DRAWING NUMBER 400294 — SHEET 6 OF 6 |

| DESIGNATOR | DATRON PART No. | DESCRIPTION | PRINCIPAL MANUFACTURER | MANUFACTURER'S PART No. | No. USED Per Assy. |
|---|---|---|---|---|---|
| R1 | | NOT USED | | | – |
| R2 | 066200 | 20R POT 3/8 SQ VERT. CERMET | BECKMAN | 72XW | 1 |
| R3 | 000221 | 220R. 5% 1/4W CARBON. | MULLARD | CR25 | 1 |
| R4 | 014320 | 432R 1% M.F. | HOLCO | H.8 | 1 |
| R5 | 000102 | 1K 5% 1/4W CARBON | MULLARD | CR25 | 2 |
| R6 | 008069 | 180K 5% 1/2W CARBON | AB | EB | 1 |
| R7 | 066102 | 1K 3/8" RIGHT ANGLED CER. POT. | BECKMAN | 72XW | 1 |
| R8 | 014021 | 4K02 1% 1/8W M.F. | HOLCO | H.8. | 1 |
| R9 | 019091 | 9K09 1% 1/8W M.F. | HOLCO | H.8. | 1 |
| R10 | 012001 | 2K 1% 1/8W M.F. | HOLCO | H.8. | 1 |
| R11 | 011302 | 13K 1% 1/8W M.F. | HOLCO | H.8. | 1 |
| R12 | 066501 | 500R 3/8" RIGHT ANGLED CER. POT | BECKMAN | 72XW | 1 |
| R13. | 000102 | 1K 5% 1/4W CARBON. | MULLARD. | CR25 | – |
| R14 | 008034 | ORIS 10% 2.5W. W.W. | WELWYN | W21 | 1 |
| | | | | | |
| L1 | 370001 | 10μH 0.85Ω R.F. CHOKE. | PLESSEY | 58/10/0011/10 | 3 |
| L2 | 370001 | 10μH " " | " | " | – |
| L3 | 370001 | 10μH " " | " | " | – |
| | | | | | |
| | | | | | |
| C1 | NOT USED | | | | – |
| C2 | NOT USED. | | | | – |
| C3 | NOT USED. | | | | – |

NOTES.

SEE SHEET 1 FOR LATEST ISSUE

| ISS | C | D | 1 c | 2 | 3 c | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ECO | – | – | RELEASED | ECO 783 | ECO BIG | | | | 1491 | 1452 | 1470 | 1517 | 1529 | 1688 | 2170 |
| DATE | – | 22-8-78 | 29-9-78 | 8-12-78 | 25 JAN 79 | 6 JUN 79 | 31-10-79 | 21.4.80 | 11-2-83 | 16.2.83 | 1.6.83 | 16.8.83 | 15.9.83 | 20.8.84 | 20.3.86 |
| CHKD | – | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | YES |

| | |
|---|---|
| DATE | 2-5-78 |
| DRAWN | B.J. |
| CHECKED | M.H. |
| APPROVED | |
| DATE | |

datron ELECTRONICS LTD

TITLE 1061/1071/1081 REAR P.C.B. ASSY.

DRAWING NUMBER 400295 SHEET 2 OF 6

| DESIGNATOR | DATRON PART No. | DESCRIPTION | PRINCIPAL MANUFACTURER | MANUFACTURER'S PART No. | No. USED Per Assy. |
|---|---|---|---|---|---|
| C4 | | NOT USED | | | |
| C5 | 101103 | 0·01μF 250V CER DISC | ERIE | 801 | 3 |
| C6 | 180026 | 10μF 350V ELECT | ITT | EN12/12 10/350 | 1 |
| C7 | 180004 | 4700μF 16V AL. ELECT | WIMA | PRINTILYT | 1 |
| C8 | 104026 | 47nF $^{+50}_{-20}$% 50V CER DISC | SIEMENS | B37449 | 1 |
| C9 | 150003 | 47μF 20% 6V3 DIP. TANT | UNION CARBIDE | K47E6V3 | 1 |
| C10 | 150021 | 22μF 20% 25V DIP. TANT | UNION CARBIDE | K22E25 | 2 |
| C11 | 150021 | " " " " | " " | " | – |
| C12 | 101103 | 0·01μF 250V. CER. DISC. | ERIE | 801 | – |
| C13 | 180025 | 1000μF 35V. ELECT. | WIMA | PRINTILYT | 2 |
| C14 | 101103 | 0·01μF 250V. CER DISC | ERIE | 801 | – |
| C15 | 180025 | 1000μF 35V ELECT | WIMA | PRINTILYT | – |
| C16 | 102102 | 1nF 10% 500V CER DISC | ITT | CD10. | 1 |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| D1 | 200022 | Si RECTIFIER 3A 400V | MOTOROLA | BY252 | 2 |
| D2 | 200022 | " " " | " " | " | – |
| D3 | 210068 | 6V8 400mW ZENER | MULLARD | BZY88C6V8 | 1 |
| D4 | 213004 | 180V 500mW ZENER | MOTOROLA | 1N5279B | 1 |

NOTES

SEE SHEET 2 FOR LATEST ISSUE

| ISS | | | | | | | | | | | | | | | |
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| CHKD | | | | | | | | | | | | | | | |

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| DATE | 2-5-78 |
| DRAWN | B.J. |
| CHECKED | M.H. |
| APPROVED | |
| DATE | |

datron ELECTRONICS LTD

TITLE 1061/71/81 REAR P.C.B ASSY.

DRAWING NUMBER 400295 SHEET 3 OF 6

| DESIGNATOR | DATRON PART No. | DESCRIPTION | PRINCIPAL MANUFACTURER | MANUFACTURER'S PART No. | No. USED Per Assy |
|---|---|---|---|---|---|
| Q1 | 240018 | 300V. N.P.N. TRANSISTOR | MOTOROLA | MJE 340 | 2 |
| Q2 | 240018 | " " " | " | " | — |
| M1 | 260068 | 5V 1½A REGULATOR | NATIONAL | LM309K/ALUM | 1 |
| M2 | 260024 | POSITIVE VOLTAGE REGULATOR | FAIRCHILD | μA78MGUIC | 1 |
| M3 | 260023 | NEGATIVE VOLTAGE REGULATOR | FAIRCHILD | μA79MGUIC | 1 |
| W1 | 209014 | 1A.S 400V BRIDGE RECT | MICRO-ELECTRONICS | W004 | 1 |
| W2 | 209003 | 100V. 1.5A BRIDGE RECT | MICRO-ELECTRONICS | W001 | 1 |
| J1 | | | | | |
| J2 | 620003 | SOLDER PCB TERMINAL LUG | HARWIN | H2105A | 5 |
| J3 | 604033 | 4 WAY FLAT GOLD WAFER PIN | MOLEX | 22-27-2041/GOLD | 17 |
| J4 | 604033 | " " " " " | " | " " " | — |
| J5 | 604033 | " " " " " | " | " " " | — |

NOTES.

SEE SHEET 2 FOR LATEST ISSUE

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| CHKD | | | | | | | | | | | | | |

DATE 2-5-78
DRAWN B.J.
CHECKED MLM
APPROVED
DATE

datron ELECTRONICS LTD

TITLE 1061/71/81 REAR P.C.B. ASSY.

DRAWING NUMBER 400295 SHEET 4 OF 6

| DESIGNATOR | DATRON PART No. | DESCRIPTION | PRINCIPAL MANUFACTURER | MANUFACTURER'S PART No. | No. USED Per Assy |
|---|---|---|---|---|---|
| J6 | 604033 | 4 WAY FLAT GOLD WAFER PIN | MOLEX | 22-27-2041/GOLD | — |
| J7 | 604033 | " " " " " | " | " | — |
| J8 | | | | | |
| J9 | 604033 | 4 WAY FLAT GOLD WAFER PIN | MOLEX | 22-27-2041/GOLD. | — |
| J10 | 604033 | " " " " " | " | " | — |
| J11 | 604033 | " " " " " | " | " | — |
| J12 | 604033 | " " " " " | " | " | — |
| J13 | 604033 | " " " " " | " | " | — |
| J14 | | | | | |
| | 410091-5A | PRINTED CIRCUIT BOARD | | | 1 |
| | 450180-2 | HEATSINK 5V | ADVANCE | | 1 |
| | 450183-1 | HEATSINK 15V | ADVANCE | | 3 |
| | 540002 | 22SWG TIN CU WIRE | | | A/R |
| | 512999 | 7/·2 PTFE WIRE WHITE | | BSG210 TYPE C | A/R |
| | 611037 | SCREW M3x8mm. NYLON HEX. HD. | NYLON & ALLOYS | | 8 |
| | 613005 | WASHER. M3 INT/SHAKEPROOF. ST. | GKN DISTRIBUTORS | | 4 |
| | 613017 | WASHER M3 FLAT NYLON | NYLON & ALLOYS. | | 8 |
| | 615002 | NUT. M3 FULL HEX STEEL | GKN | ZINC PLATED | 4 |
| | 615008 | NUT. M3 FULL HEX NYLON | GKN | | 2 |

NOTES.

SEE SHEET 2 FOR LATEST ISSUE

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| CHKD | | | | | | | | | | | | | |

DATE 2-5-78
DRAWN B.J.
CHECKED MLM
APPROVED
DATE

datron ELECTRONICS LTD

TITLE 1061/71/81 REAR P.C.B. ASSY

DRAWING NUMBER 400295 SHEET 5 OF 6

| DESIGNATOR | DATRON PART No | DESCRIPTION | PRINCIPAL MANUFACTURER | MANUFACTURER'S PART No. | No. USED Per Assy. |
|---|---|---|---|---|---|
| | 611016 | SCREW M3 x 8mm STEEL POZ PAN ZINC PL. | GKN | | 6 |
| | 618007 | MELINEX WASHERS 12·7 x 16·5 x 0·05mm. | JERMYN. | J26-5001 | 2 |
| | 620007 | TEST POINT TERMINAL | MICROVAR | C30 | 9 |
| | 618001 | INSULATING BUSH | JERMYN | A1218 | 2 |
| | 618009 | INSULATING PAD SIL TO3 | WARTH | 3223-07FR-06 | 1 |
| | 590004 | SLEEVE - PTFE | HELLERMANN ELECTRIC | FE10 | A/R. |
| | 900004 | SILICONE RUBBER COMPOUND | R.S. | 554-119. | A/R |
| | 420080-1 | WARNING LABEL | | | 2 |
| | 613029 | M3 CRINKLE WASHER SS | | | 2 |
| | 613009 | 48A SOLDER TAG BRASS | TIN PL. | | 2 |
| | 590001 | SLEEVE MAX. CABLE ϕ3·0 | HELLERMANN ELECTRIC | H15 x 20mm BLACK HELSYN | 3 |
| | 590006 | HEATSHRINK SLEEVE ϕ2·4 INT | RS OR HELLERMANN ELECTRIC | 399-495 OR LVR24 | 20mm |
| | 630024 | STEATITE BEAD 16 SWG | PARK ROYAL PORCELAIN | N° 2 | 2 |
| | 630243 | GLASS BEAD 2.4% x 0.8% x 1.8 | MANSOL (PREFORMS) | M5363B/3 | 2 |

NOTES.

SEE SHEET 2 FOR LATEST ISSUE

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| ECO | | | | | | | | | | | | | | |
| DATE | | | | | | | | | | | | | | |
| INIT. | | | | | | | | | | | | | | |

DATE 2-5-78
DRAWN B.J.
CHECKED MHH
APPROVED
DATE

datron ELECTRONICS LTD

TITLE 1061/71/81 REAR P.C.B ASSY

DRAWING NUMBER 400295

SHEET 6 OF 6

| DESIGNATOR | DATRON PART No | DESCRIPTION | PRINCIPAL MANUFACTURER | MANUFACTURER'S PART No | No. USED Per Assy |
|---|---|---|---|---|---|
| J2 | 572115/C | 16 WAY RIBBON CABLE ASSY | DATRON | | 1 |
| J3 | 604035 | 4CCT. RIGHT ANGLED WAFER. GOLD | MOLEX | 22-12-2041 | 5 |
| J4 | 604035 | " " " " | " | " | — |
| J6 | 604035 | " " " " | " | " | — |
| | 410092-5A | P.C.B. | | | 1 |
| J1 & J5 | 604036 | STRIP OF 10 AMP PINS | AMP | 163740-8 | 4 |
| | 630023 | SCOTCHFLEX ADHESIVE CLIP | 3M | CLIP 706 | 1 |
| | 630099 | 25mm MASKING TAPE | 3M | SCOTCH N.230 | A/R |
| | 620007 | TEST POINT TERMINAL | MICROVAR | C 30 | 2 |
| R1 | 000473 | 47K 5% ¼W CARBON | MULLARD | CR25 | 2 |
| R2 | 000473 | 47K " " " | " | " | — |
| D1 | 200002 | Si RECTIFIER 1A 50V | FAIRCHILD | IN4001 | 2 |
| D2 | 200002 | " " " " | " | " | — |

NOTES

SEE SHEET 2 FOR LATEST ISSUE

| ISS | C | D | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|---|---|
| ECO | — | — | RELEASED | ECO784 | ECO848 | 867/904 | 992 | 1000 | 1102 | 1217 |
| DATE | — | 25-8-78 | 29-9-78 | 6-12-78 | 4-5-79 | 11-6-79 | 25-10-79 | 18.1.80 | 14.4.80 | 18-8-81 |
| CHKD | — | MD | | MD | MD | MD | MD | MD | MD | MD |

DATE 2-5-78
DRAWN B.J.
CHECKED D.G
APPROVED
DATE

datron ELECTRONICS LTD

TITLE 1061/71/81 CENTRE P.C.B. ASSY

DRAWING NUMBER 400296 SHEET 2 OF 2

JW 1164

| DESIGNATOR | DATRON PART No | DESCRIPTION | PRINCIPAL MANUFACTURER | MANUFACTURER'S PART No. | No USED Per Assy |
|---|---|---|---|---|---|
| J2 | 604035 | RIGHT ANGLED WAFER PIN. GOLD. | MOLEX | 22-12-2041 | 12 |
| J3 | 604035 | " " " " " | " | " | — |
| J4 | 604035 | " " " " " | " | " | — |
| J5 | 604035 | " " " " " | " | " | — |
| J6 | 604035 | " " " " " | " | " | — |
| | 410093-4 | PRINTED CIRCUIT BOARD | | | 1 |
| | 510111 | 7/0.2 BROWN WIRE | | | 120 mm |
| J1 & J7 | 604036 | STRIP OF 10 AMP PINS | AMP | 163740-8 | 2 |
| | 605053 | 12 WAY POLARISED SOCKET | MOLEX | 22-01-2125 | 2 |
| | 605057 | GOLD CRIMP PINS | MOLEX | 4809-GL | 7 |
| | 606004 | PLASTIC POLARISING PEG | MOLEX | 4161-1 | 4 |
| | 540002 | 22 S.W.G. TIN.CU.WIRE | | | A/R |
| | 590001 | SLEEVE MAX CABLE Ø3.0 | HELLERMANN ELECTRIC | H15 x 20mm BLK HELSYN | 1 |

NOTES

SEE SHEET 2 FOR LATEST ISSUE

| ISS | C | D | 1 | 2 |
|---|---|---|---|---|
| ECO | — | — | RELEASED | 867 |
| DATE | — | 24.8.78 | 29-9-78 | 11-6-79 |
| CHKD | — | MD | | MD |

DATE 28-4-78
DRAWN B.J.
CHECKED D.G
APPROVED
DATE

datron ELECTRONICS LTD

TITLE 1061/71/81 L.H. PCB ASSEMBLY

DRAWING NUMBER 400297 SHEET 2 OF 2

JW 1164

| DESIGNATOR | DATRON PART No | DESCRIPTION | PRINCIPAL MANUFACTURER | MANUFACTURER'S PART No | No USED Per Assy |
|---|---|---|---|---|---|
| R1 | 000334 | 330K 5% 1/4W CARBON | MULLARD | CR25 | 2 |
| R2 | 000334 | " " " " | " | " | — |
| | 410094-2,A | P.C.B. | | | 1 |
| | 540002 | 22SWG TIN. CU. WIRE | | | A/R |
| J2 | 574270/C | 24 WAY RIBBON CABLE ASSY | DATRON | | 1 |
| J1 & J3 | 604036 | STRIP OF 10 AMP PINS | AMP | 163740-8 | 4 |
| | 590001 | SLEEVE MAX CABLE Ø 3·0 | HELLERMANN ELECTRIC | H15x20mm BLK HELSYN | 2 |
| | 630099 | 25mm MASKING TAPE. | 3M | SCOTCH N.230 | A/R |

NOTES

SEE SHEET 2 FOR LATEST ISSUE

| ISS | C | D | 1c | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|---|---|---|
| ECO | - | - | RELEASED | ECO 850 | 867/904 | 943 | 1217 | 1474 |
| DATE | - | 24-8-78 | 29-9-78 | 4-5-79 | 11-6-79 | 10.9.79 | 18.8.81 | 3.6.83 |
| CHKD | - | MD | | MD | MD | MD | MD | |

28-4-78
DRAWN B.J.

datron ELECTRONICS LTD

1061/71/81
R.H. P.C.B. ASSEMBLY

DRAWING NUMBER 400298

SHEET 2 OF 2

| DESIGNATOR | DATRON PART No. | DESCRIPTION | PRINCIPAL MANUFACTURER | MANUFACTURER'S PART No. | No. USED Per Assy. |
|---|---|---|---|---|---|
| R1 | 000333 | 33K. 5%. ¼W CARBON | MULLARD | CR25 | 2 |
| R2 | 000824 | 820K 5% ¼W CARBON | MULLARD | CR25 | 1 |
| R3 | 000223 | 22K 5% ¼W CARBON | MULLARD | CR25 | 2 |
| R4 | 000222 | 2K2 5% ¼W CARBON | MULLARD | CR25 | 3 |
| R5 | 000104 | 100K 5% ¼W CARBON | MULLARD | CR25 | 3 |
| R6 | 000104 | 100K 5% ¼W CARBON | MULLARD | CR25 | – |
| R7 | 000104 | 100K 5% ¼W CARBON | MULLARD | CR25 | – |
| R8 | 000102 | 1K 5% ¼W CARBON | MULLARD | CR25 | 1 |
| R9 | 000105 | 1M 5% ¼W CARBON | MULLARD | CR25 | 3 |
| R10 | 000105 | 1M 5% ¼W CARBON | MULLARD | CR25 | – |
| R11 | 000105 | 1M 5% ¼W CARBON | MULLARD | CR25 | – |
| R12 | 000103 | 10K 5% ¼W CARBON | MULLARD | CR25 | 5 |
| R13 | 000103 | 10K 5% ¼W CARBON | MULLARD | CR25 | – |
| R14 | 000103 | 10K 5% ¼W CARBON | MULLARD | CR25 | – |
| R15 | 000222 | 2K2 5% ¼W CARBON | MULLARD | CR25 | – |
| R16 | 000223 | 22K 5% ¼W CARBON | MULLARD | CR25 | – |
| R17 | 000103 | 10K 5% ¼W CARBON | MULLARD | CR25 | – |
| R18 | 015112 | 51K1 1% ⅛W M.F | WELWYN | 4033C | 1 |
| R19 | 070123 | 900Ω 0.1% 5 ppm/°c W.W. | MANN (KELVIN) | MX 125-B (EP-01) | 1 |
| R20 | 070124 | 90Ω 0.1% 5 ppm/°c W.W. | MANN | MX 125-B | 1 |
| R21 | 070125 | 9Ω 0.1% 5 ppm/°C W.W. | MANN | AX 175 BT | 1 |
| R22 | 070126 | 1Ω 0.1% 5 ppm/°C W.W. | MANN | LR 500 BU | 1 |
| R23 | 000222 | 2K2 5% ¼W CARBON | MULLARD | CR25 | – |

NOTES.

SEE SHEET 1 FOR LATEST ISSUE

| ISS | A | B | C | 1F | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| F.C.O. | | | | | 972,987 | 2,000 | 1048 | 1087.1099. INO | IN6 | 1189 | 1080 | V217 | 1257 | 1529 | 1655 |
| DATE | 17 JULY 79 | 21 AUG 79 | 24.9.79 | 24.9.79 | 25-10-79 | 4-1-80 | 16.1.80 | 14.4.80 | 3.6.80 | 17.12.80 | 26.2.81 | 16.8.81 | 24.11.81 | 16.3.82 | 21.5.85 |
| DRWD | | MD | MD | MD | MD | MD | MD | MD | MD | MD | MD | MD | MD | MD | MD |

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| DATE | 17 JULY 79 |
| DRAWN | W.G. SMITH |
| CHECKED | |
| APPROVED | |
| DATE | |

datron ELECTRONICS LTD

TITLE: CURRENT P.C.B

DRAWING NUMBER 400304 — SHEET 2 OF 7

| DESIGNATOR | DATRON PART No. | DESCRIPTION | PRINCIPAL MANUFACTURER | MANUFACTURER'S PART No. | No. USED Per Assy. |
|---|---|---|---|---|---|
| R24 | 008053 | 1K 1% ½W MET-GLAZE | NEOHM | RGP0207 | 1 |
| R25 | 070127 | 0R1 0.1% 5ppm/°C W.W. | MANN | LR 500 BU | 1 |
| R26 | 000333 | 33K 5% ¼W CARBON | MULLARD | CR25 | – |
| R27 ● | 000221 | 220R 5% ¼W CARBON | MULLARD | CR25 | 2 |
| R28 ● | 000221 | 220R 5% ¼W CARBON | MULLARD | CR25 | – |
| R29 | 000103 | 10k 5% ¼W CARBON | MULLARD | CR25 | – |
| | | | | | |
| | | | | | |
| C1 | 150020 | 10uF 25v TANT | UNION CARBIDE | K10E25 | 2 |
| C2 | 150020 | 10uF 25v TANT | UNION CARBIDE | K10E25 | – |
| C3 | 101103 | 10nf 250v CER DISC | ERIE | 801 | 1 |
| C4 | 150014 | 680nf 35v 20% TANT | UNION CARBIDE | KR6BE35 | 1 |
| C5 | 150016 | 1uf 35V TANT | UNION CARBIDE | K1R0E35 | 2 |
| C6 | 150016 | 1uf 35V TANT | UNION CARBIDE | K1R0E35 | – |
| C7 * | 102471 | 470pF 10% 500V CER DISC | ITT | CD10 | 1 |
| + | 102331 | 330pF 10% 500V CER DISC | ITT | CD10 | |
| C8 | 102101 | 100pF 10% 500v CER DISC | ITT | CD10 | 1 |
| C9 | 110013 | 100nF 20% POLYESTER | MULLARD | C280AEP100K | 1 |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |

NOTES * VALUE CORRECT IF R19 MANUFACTURED BY MANN - TYPE MX125-B

+ VALUE CORRECT IF R19 MANUFACTURED BY KELVIN - TYPE EP-01

● R27 + 28 NOT USED WITH RL1, RL2 ALTERNATIVE

SEE SHEET 2 FOR LATEST ISSUE

| ISS | | | | | | | | | | | | | | |
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| F.C.O. | | | | | | | | | | | | | | |
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| DATE | 17 JULY 79 |
| DRAWN | W.G. SMITH |
| CHECKED | |
| APPROVED | |
| DATE | |

datron ELECTRONICS LTD

TITLE: CURRENT P.C.B.

DRAWING NUMBER 400304 — SHEET 3 OF 7

| DESIGNATOR | DATRON PART No. | DESCRIPTION | PRINCIPAL MANUFACTURER | MANUFACTURER'S PART No. | No. USED Per Assy. |
|---|---|---|---|---|---|
| D1 | 200001 | 75mA. 75v. G.P. Si DIODE. | FAIRCHILD. | IN4148. | 5 |
| D2 | 200008 | 200mA. 125v. LL. Si DIODE. | FAIRCHILD. | IN458A. | 3 |
| D3 | 200008 | 200mA. 125V. L.L. Si DIODE. | FAIRCHILD. | IN458A. | – |
| D4 | 200008 | 200mA. 125V. L.L. Si DIODE. | FAIRCHILD. | IN458A. | – |
| D5 | 200001 | 75mA. 75v. G.P. Si DIODE. | FAIRCHILD. | IN4148 | – |
| D6 | 200001 | 75mA. 75v. G.P. Si DIODE. | FAIRCHILD. | IN4148 | – |
| D7 | 200001 | 75mA. 75V. G.P. Si DIODE. | FAIRCHILD. | IN4148 | – |
| D8 | 200001 | 75mA. 75V. G.P. Si DIODE. | FAIRCHILD. | IN4148 | – |
| D9 | | NOT USED | | | |
| D10 | | NOT USED | | | |
| D11 | 220020 | FET DIODE 100pA $I_R$. | TELEDYNE. | PAD100 | 2 |
| D12 | 220020 | FET DIODE 100pA $I_R$. | TELEDYNE. | PAD100 | – |
| D13 | 200022 | 3A. 400V. G.P. Si DIODE. | MOTOROLA | BY252 | 4 |
| D14 | 200022 | 3A. 400V. G.P. Si DIODE. | MOTOROLA | BY252 | – |
| D15 | 200022 | 3A. 400V. G.P. Si DIODE. | MOTOROLA | BY252 | – |
| D16 | 200022 | 3A. 400V. G.P. Si DIODE. | MOTOROLA | BY252 | – |

NOTES

SEE SHEET 2 FOR LATEST ISSUE

| ISS | | | | | | | | | | | | | |
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| DATE | | | | | | | | | | | | | |
| CHKD | | | | | | | | | | | | | |

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|---|---|
| DATE 17 JULY 79 | datron ELECTRONICS LTD |
| DRAWN W.G. SMITH | TITLE CURRENT P.C.B |
| CHECKED | |
| APPROVED | |
| DATE | DRAWING NUMBER 400304 — SHEET 4 OF 7 |

| DESIGNATOR | DATRON PART No. | DESCRIPTION | PRINCIPAL MANUFACTURER | MANUFACTURER'S PART No. | No. USED Per Assy. |
|---|---|---|---|---|---|
| Q1 | | NOT USED | | | |
| Q2 | 250001 | Si P.N.P. TRANSISTOR. | NATIONAL. | BC214/TO18 | 2 |
| Q3 | | NOT USED | | | |
| Q4 | 250001 | Si P.N.P. TRANSISTOR. | NATIONAL. | BC214/TO18 | – |
| Q5 | | NOT USED | | | |
| Q6 | | NOT USED | | | |
| Q7 | 230003 | N-CHAN J FET. | TELEDYNE. | U1899 JF | 1 |
| Q8 | 230035 | N-CHAN J FET. | TELEDYNE. | U1897 JF | 2 |
| Q9 | 230002 | N-CHAN J FET. | TELEDYNE. | U1994 JF | 1 |
| Q10 | 230035 | N-CHAN J FET. | TELEDYNE. | U1897 JF | – |
| M1 | 290131-1 | QUAD 'D' REGISTER HYBRID | | SEE DRG | 2 |
| M2 | 290132-1 | DUAL 'D' FLIP-FLOP HYBRID | | SEE DRG | 1 |
| M3 | 290131-1 | QUAD 'D' REGISTER HYBRID | | SEE DRG | – |
| M4 | 290077 | 7 x DARLINGTON DRIVER | SPRAGUE/EXAR | ULN2004A/XR2204CP | 1 |
| M5 | 260027 | 714 OP AMP | FAIRCHILD | uA 714 HC. | 1 |

NOTES.

SEE SHEET 2 FOR LATEST ISSUE

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| DATE 17 JULY 79 | datron ELECTRONICS LTD |
| DRAWN W.G. SMITH | TITLE CURRENT P.C.B |
| CHECKED | |
| APPROVED | |
| DATE | DRAWING NUMBER 400304 — SHEET 5 OF 7 |

| DESIGNATOR | DATRON PART No. | DESCRIPTION | PRINCIPAL MANUFACTURER | MANUFACTURER'S PART No. | No. USED Per Assy. |
|---|---|---|---|---|---|
| AN1 | | NOT USED | | | |
| | | | | | |
| RL1 * | 330017 | RELAY REED LOW THERMAL. | OMRON | G2E 184PH | 2 |
| RL2 * | 330017 | RELAY REED LOW THERMAL. | OMRON | G2E 184PH | - |
| RL3 | 330019 | RELAY 4P2W 7v HOLD-IN | P&B | SEE DRAWING | 1 |
| RL4 | 330018 | RELAY 2P2W 7v HOLD-IN | P&B | SEE DRAWING | 1 |
| | | | | | |
| | 400379/1-3 | MOLEX TERMINAL/WIRE ASSY | DATRON | | 1 |
| | 410104-5A | PRINTED CIRCUIT BOARD | | | 1 |
| | 459112 | RELAY BRACKET | | | 2 |
| | | | | | |
| | 512999 | 7/·2 PTFE INSULATED WHITE WIRE | | TYPEC | 807mm TOTAL |
| | 620007 | TEST POINT TERMINAL | MICROVAR | C30 | 5 |
| | | | | | |
| | 590001 | SLEEVE BLACK | HELLERMAN ELECTRIC | H16x20mm HELYSYN | 16 |
| | 605056 | CRIMP TERMINAL | MOLEX | 4809-TL | 3 |
| J1 | 571095/C | 16 WAY AP/3M RIBBON CABLE | DATRON | | 1 |
| | 605060 | 14 WAY D.I.L. SOCKET | JERMYN | J23-18014 | 1 |
| | 605061 | 16 WAY D.I.L. SOCKET | JERMYN | J23-18016 | 3 |
| | 605051 | 4 WAY POLARISED SOCKET | MOLEX | (22-01-2045) 6471-4-1 | 1 |
| J3 | 605052 | 8 WAY POLARISED SOCKET | MOLEX | (22-01-2085) 6471-8-1 | 1 |
| J2 | 605053 | 12 WAY POLARISED SOCKET | MOLEX | (22-0-2125) 6471-12-1 | 1 |
| | 605057 | CRIMP TERMINAL | MOLEX | 4809-GL | 8 |

NOTES. * ALTERNATIVE 330014 OR 330013

SEE SHEET 2 FOR LATEST ISSUE

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TITLE CURRENT P.C.B.

DRAWING NUMBER 400304

SHEET 6 OF 7

| DESIGNATOR | DATRON PART No. | DESCRIPTION | PRINCIPAL MANUFACTURER | MANUFACTURER'S PART No. | No. USED Per Assy. |
|---|---|---|---|---|---|
| | | | | | |
| | | | | | |
| | 611004 | SCREW M3x6 POSI PAN | | | 2 |
| | 613005 | WASHER M3 INT/SHAKEPROOF | | | 2 |
| | 615002 | NUT M3 FULL HEX | | | 2 |
| | 615005 | NUT 3-48 UNC FULL HEX | | | 2 |
| | 613014 | WASHER M2.5 INT SHAKEPROOF | | | 2 |
| | 617010 | NYLATCH PLUNGER | C.J. FOX & SON | HN3P-32-4-1 | 4 |
| | 617011 | NYLATCH GROMMET | C.J. FOX & SON | HN3G | 4. |
| | | | | | |
| | 620003 | SOLDER P.C.B TERMINAL WG | HARWIN | H2105A | 13 |
| | 630024 | STANDARD STEATITE INSUL. BEAD | PARK ROYAL PORCELAIN CO. | TYPE Nº 2 (16SWG.) | 24 |
| | 920082 | FUSE HOLDER. 20mm P/MTG | BELLING & LEE | L2002 | 1 |
| | 920071 | FUSE 1·6A QUICK ACTING 20mm | BESWICK | 3501-1·6-F-250v | 1 |
| | 590004 | SLEEVE - PTFE | HELLERMANN ELECTRIC | FE10 | A/R |
| | 590055 | SLEEVE ∅1·0 SIL. RUBBER | " " | H15 CONT. BLACK | 30mm |
| | 630036 | STEATITE BEAD 18 SWG | PARK ROYAL PORCELAIN | Nº1 | 2 |

NOTES

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TITLE CURRENT P.C.B

DRAWING NUMBER 400304

SHEET 7 OF 7

| DESIGNATOR | DATRON PART No. | DESCRIPTION | PRINCIPAL MANUFACTURER | MANUFACTURER'S PART No. | No. USED Per Assy. |
|---|---|---|---|---|---|
| R1 | 000123 | 12K 5% 1/4W CARBON | MULLARD | CR25 | 3 |
| R2 | 000332 | 3K3 " " " | " | " | 4 |
| R3 | 000332 | 3K3 " " " | " | " | – |
| R4 | 000103 | 10K " " " | " | " | 6 |
| R5 | 000123 | 12K " " " | " | " | – |
| R6 | 000222 | 2K2 " " " | " | " | 4 |
| R7 | 000222 | 2K2 " " " | " | " | – |
| R8 | 000123 | 12K " " " | " | " | – |
| R9 | 000333 | 33K " " " | " | " | 1 |
| R10 | 000562 | 5K6 " " " | " | " | 1 |
| R11 | 000103 | 10K " " " | " | " | – |
| R12 | 000105 | 1M " " " | " | " | 1 |
| R13 | 000222 | 2k2 " " " | " | " | – |
| R14 | 000103 | 10k " " " | " | " | – |
| R15 | 000332 | 3k3 " " " | " | " | – |
| R16 | 000222 | 2k2 " " " | " | " | – |
| R17 | 000681 | 680R " " " | " | " | 2 |
| R18 | 000681 | 680R " " " | " | " | – |
| R19 | 000332 | 3k3 " " " | " | " | – |
| R20 | 000103 | 10k " " " | " | " | – |
| R21 | 000103 | 10K " " " | " | " | – |
| R22 | 000103 | 10k " " " | " | " | – |

NOTES.

SEE SHEET 1 FOR LATEST ISSUE

| ISS | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|---|---|---|---|---|---|---|---|---|---|---|
| E.C.O | RELEASED | 902/687 | 972 | 981 | 1085 | 1166 | 1199 | 1329 | 1653 | |
| DATE | 26-3-79 | 15-6-79 | 25-10-79 | 6-11-79 | 2-1-80 | 22.4.80 | 24.9.80 | 24.2.81 | 8-7-82 | 20/5/85 |
| CHKD | MD | MD | MD | MD | MD | MD | MD | MD | MD | AP |

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|---|---|
| DATE | 5-3-79 |
| DRAWN | B.J. |
| CHECKED | MD |
| APPROVED | |
| DATE | |

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TITLE: REAR INPUT / RATIO ASSY.

DRAWING NUMBER 400307. SHEET 2 OF 7

| DESIGNATOR | DATRON PART No. | DESCRIPTION | PRINCIPAL MANUFACTURER | MANUFACTURER'S PART No. | No. USED Per Assy. |
|---|---|---|---|---|---|
| C1 | 150022 | 2µ2F 20% 35V DIP. TANT | UNION CARBIDE | K2R2E35 | 2 |
| C2 | 150022 | 2µ2F 20% 35v DIP. TANT | UNION CARBIDE | K2R2E35 | – |
| C3 | 150020 | 10µF 20% 25v DIP. TANT | UNION CARBIDE | K10E25 | 2 |
| C4 | 150020 | 10µF 20% 25V DIP. TANT | UNION CARBIDE | K10E25 | – |
| C5 | 102101 | 100pF 10% 500V CER DISC | ITT | CD10 | 1 |
| C6 | 110013 | 100nF 20% 250v POLYESTER | MULLARD | C280AEP100K | 1 |
| C7 | 150014 | 680nF 20% 35V DIP. TANT | UNION CARBIDE | KR68E35 | 2 |
| C8 | 150014 | 680nF 20% 35V DIP. TANT | UNION CARBIDE | KR68E35 | – |

NOTES.

SEE SHEET 2 FOR LATEST ISSUE

| ISS | | | | | |
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| E.C.O | | | | | |
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| CHKD | | | | | |

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| DATE | 23.9.80 |
| DRAWN | IL |
| CHECKED | |
| APPROVED | |
| DATE | |

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TITLE: REAR INPUT/RATIO 1061/1071

DRAWING NUMBER 400307 SHEET 3 OF 7

| DESIGNATOR | DATRON PART No. | DESCRIPTION | PRINCIPAL MANUFACTURER | MANUFACTURER'S PART No. | No. USED Per Assy. |
|---|---|---|---|---|---|
| D1 | 200001 | 75mA 75V GP. Si DIODE | FAIRCHILD | IN4148. | 8 |
| D2 | 200001 | " " " " " | " | " | — |
| D3 | 200001 | " " " " " | " | " | — |
| D4 | 200001 | " " " " " | " | " | — |
| D5 | 200001 | " " " " " | " | " | — |
| D6 | 200001 | " " " " " | " | " | — |
| D7 | 200001 | " " " " " | " | " | — |
| D8 | 200001 | " " " " " | " | " | — |
| Q1 | 240001 | Si NPN TRANSISTOR | NATIONAL | BC184/TO18 | 4 |
| Q2 | 240001 | " " " | " | " | — |
| Q3 | 250001 | Si PNP TRANSISTOR | NATIONAL | BC214/TO18 | 2 |
| Q4 | 250001 | " " " | " | " | — |
| Q5 | 240001 | Si NPN TRANSISTOR | NATIONAL | BC184/TO18 | — |
| Q6 | 240001 | " " " | " | " | — |
| M1 | 290132-1 | DUAL 'D' FLIP-FLOP HYBRID | | | 1 |
| J1 | 604036 | CON. PIN. STRIP OF 10. HORIZ. TYPE. | AMP | 163740-8 | 2 |
| J2, J3 | 605052 | 8 WAY POLARISED SOCKET. | MOLEX | (22-01-2085) 6471-8-1 | 2 |

NOTES.

SEE SHEET 5 FOR LATEST ISSUE

| ISS | | | | | | | | |
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TITLE REAR INPUT / RATIO ASSY.

DRAWING NUMBER 400307

SHEET 4 OF 7

| DESIGNATOR | DATRON PART No. | DESCRIPTION | PRINCIPAL MANUFACTURER | MANUFACTURER'S PART No. | No. USED Per Assy. |
|---|---|---|---|---|---|
| J4 & J6. | 604033 | FLAT WAFER PIN (4 WAY GOLD) | MOLEX | 22-27-2041 / GOLD | 3 |
| J5 | 605051 | 4 WAY POLARISED SOCKET | MOLEX | 22-01-2045 | 1 |
| | 400379/4-3 | WIRE/TERMINAL ASSY. | HOLDEN CORDS | | 6 |
| | 400379/5-3 | " " " | " " | | 4 |
| RL1 & RL4. | 330018 | RELAY 2P2W 7v HOLD-IN | P&B | SEE DRAWING | 2 |
| RL2 & RL3. | 330019 | RELAY 4P2W 7v HOLD-IN | P&B | SEE DRAWING | 2 |
| | 410106-5 | COMPONENT PCB. | | | 1 |
| | 410132-4 | RELAY PCB. | | | 1 |
| | 450185-1 | SOCKET PLATE | | | 1 |
| | 450241-1 | RELAY BRACKET | | | 1 |
| | 540002 | 22SWG TINNED COPPER WIRE | | | A/R |
| | 540008 | 7/2 PTFE INS. WHITE WIRE | | | 140mm |

NOTES.

SEE SHEET 3 FOR LATEST ISSUE

| ISS | | | | | | | | |
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TITLE REAR INPUT / RATIO ASSY

DRAWING NUMBER 400307

SHEET 5 OF 7

| DESIGNATOR | DATRON PART No. | DESCRIPTION | PRINCIPAL MANUFACTURER | MANUFACTURER'S PART No. | No. USED Per Assy. |
|---|---|---|---|---|---|
| | 590001 | SLEEVE MAX CABLE ϕ 3·0mm | HELLERMANN ELECTRIC. | H15 x 20mm BLK HELSYN. | 23 |
| | 590004. | SLEEVE - PTFE | " " | FE 10 | A/R |
| | 602007 | RELAY SOCKET 2 POLE PCB MOUNT | POTTER & BRUMFIELD | 27E 212 | 1 |
| | 602009 | RELAY SOCKET 4 POLE PCB MOUNT | " " | 27E 213 | 1 |
| J10, J11 | 604008 | 7 WAY PLUG PANEL MOUNT | PYE CONNECTORS | M7P | 2 |
| | 605009 | 7 WAY SOCKET | PYE CONNECTOR | M7S | 2 |
| | 605060 | 14 WAY DIL SOCKET | JERMYN | J23-18014 | 1 |
| | 605057 | CRIMP TERMINAL | MOLEX | 4809-GL | 2 |
| | 606001 | LOCKING HOOD | PYE CONNECTORS. | MHN | 2 |
| | 606002 | NUT | PYE CONNECTORS. | MN | 2 |
| | 606003 | WASHER | " " | MLW | 2 |
| | 611004 | SCREW M3 x 6mm STEEL POZI-PAN. ZINC PLATED . GKN. | | | 7 |
| | 611007 | SCREW M3 x 6mm STEEL POZI-CSK. ZINC PLATED . GKN. | | | 7 |
| | 611016 | " M3 x 8mm " " | PAN " " " | | 4 |
| | 612020 | STANDOFF NYLON M3 x 19 TRANSIPILLAR. | W.K. ELECTRONICS | TPI/G·5/19/M3/I/I | 5 |

NOTES.

SEE SHEET 3 FOR LATEST ISSUE

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TITLE REAR INPUT / RATIO ASSY

DRAWING NUMBER 400307 SHEET 6 OF 7

| DESIGNATOR | DATRON PART No. | DESCRIPTION | PRINCIPAL MANUFACTURER | MANUFACTURER'S PART No. | No. USED Per Assy. |
|---|---|---|---|---|---|
| | 613005 | WASHER M3 INT/SHAKEPROOF ST. | GKN DISTRIBUTORS | ZINC PLATED | 13 |
| | 615001 | NUT BBA FULL HEX STEEL | | ZINC PLATED | 2 |
| | 615002 | " M3 " " " | | " " | 2 |
| | 630005 | CLIP FOR P&B RIO 2POLE RELAY | POTTER & BRUMFIELD | 20C249 | 1 |
| | 630028 | CLIP FOR P&B RIO4POLE RELAY | " " | 20C250 | 1 |
| | 700069. | DPDT SLIDE SWITCH | WAYCOM | S-5022CD03-0 + 3/4" TRIGGER & STYLE 2/C PCB MOUNT, CONTACTS. | 1 |

NOTES

SEE SHEET 3 FOR LATEST ISSUE

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| MOD | | | | | | | | | |
| DATE | | | | | | | | | |
| CHKD | | | | | | | | | |

DATE 5-3-79
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TITLE REAR INPUT/RATIO ASSY

DRAWING NUMBER 400307 SHEET 7 OF 7

| DESIGNATOR | DATRON PART No. | DESCRIPTION | PRINCIPAL MANUFACTURER | MANUFACTURER'S PART No. | No. USED Per Assy. |
|---|---|---|---|---|---|
| R1 | 000102 | 1KΩ 5% ¼W CARBON | MULLARD | CR25 | 1 |
| R2 | 000682 | 6K8 " " " | " | " | 1 |
| R3 | 090001 | PTC THERMISTOR | MULLARD | VA8650 | 2 |
| R4 | 090001 | " " | " | " | - |
| R5 | 066102 | 1KΩ 3/8" SQ VERTICAL POT | BECKMAN | 72XW | 1 |
| R6 | 000104 | 100K 5% ¼W CARBON | MULLARD | CR25 | 1 |
| R7 | 070128 | 21K51 0·1% WIRE WOUND | MANN | MX 125 | 1 |
| R8 | 070066 | 10K 0·1% WIRE WOUND | MANN | MX 125 | 1 |
| C1 | 101103 | 0·01μF 250V CER DISC | ITT | CD10K3N00JS 5550D3C | 2 |
| C2 | 101103 | 0·01μF " " " | " | " | - |
| C3 * | 102330 | 33pF 500V CER DISC | ITT | CD10PG330JS 5550D3C | 1 * |
| C4 | 102330 | 33pF " " " | " | " | 1 |
| C5 | 110013 | 0·1μF 20% 250V POLYESTER | MULLARD | C280AE/P100K | 1 |

NOTES. * ONLY REQUIRED WHEN M1 ALTERNATIVE (TYPE 101) IS USED.

SEE SHEET 2 FOR LATEST ISSUE

| ISS. | 1 | 2 | 3 |
|---|---|---|---|
| E.C.O. | RELEASED | 907 | 945 |
| DATE | 27·12·78 | 20.6.79 | 10.9.79 |
| CHKD. | MD | MD | BJ |

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| DATE | 22-11-78 |
| DRAWN | B.J |
| CHECKED | MD |
| APPROVED | |
| DATE | |

datron ELECTRONICS LTD

TITLE: ANALOGUE OUTPUT PCB ASSY.

DRAWING NUMBER 400308 SHEET 2 OF 4

| DESIGNATOR | DATRON PART No. | DESCRIPTION | PRINCIPAL MANUFACTURER | MANUFACTURER'S PART No. | No. USED Per Assy. |
|---|---|---|---|---|---|
| D1 | 213001 | 10V 5w ZENER | MOTOROLA | IN5347 | 2 |
| D2 | 213001 | 10V " " | " | " | - |
| M1 * | 260002 | OP AMP | FAIRCHILD | μA741C | 1 * |
| M2 | 260026 | OP AMP | NATIONAL | LM212H | 1 |
| | 400379/4-3 | WIRE / TERMINAL ASSY | HOLDEN CORDS. | | 5 |
| | 410107-3 | P.C.B. | | | 1 |
| | 450186-1 | SOCKET PLATE. | | | 1 |
| | 510600 | 7/·2 PVC INSUL (BLACK) WIRE | | | 50mm |
| | 510222 | 7/·2 PVC INSUL (RED) WIRE | | | 50mm |
| | 590001 | SLEEVE MAX CABLE ϕ 3·0 | HELLERMANN ELECTRIC | H15x20mm BLACK HELSW | 2 |
| | 605007 | 5 WAY SOCKET | PYE CONNECTORS | M55 | 1 |
| J1 | 605052 | 8 WAY POLARISED SOCKET | MOLEX | (22-01-2085) 6471-8-1 | 1 |

NOTES. * M1 ALTERNATIVE 260025 (LM101).

SEE SHEET 2 FOR LATEST ISSUE

| ISS. | | | | | | | | | | | | | |
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| CHKD. | | | | | | | | | | | | | |

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| DATE | 22-11-78 |
| DRAWN | B.J. |
| CHECKED | |
| APPROVED | |
| DATE | |

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TITLE: ANALOGUE OUTPUT PCB ASSY

DRAWING NUMBER 400308 SHEET 3 OF 4

| DESIGNATOR | DATRON PART No. | DESCRIPTION | PRINCIPAL MANUFACTURER | MANUFACTURER'S PART No. | No. USED Per Assy. |
|---|---|---|---|---|---|
| | 606001 | LOCKING HOOD | PYE CONNECTORS | MHN | 1 |
| | 606002 | NUT | " " | MN | 1 |
| | 606003 | WASHER | " " | MLW | 1 |
| | 612019 | STANDOFF LOCKING TYPE 7/8" NYLON: | RICHCO | LCBS-14R | 4 |
| | 620003 | SOLDER PCB TERMINAL LUG | HARWIN | H2105A | 2 |
| | 630024 | INSULATING BEADS, STEATITE. | | (TYPE No2) | 8. |
| | 620007 | TEST POINT TERMINAL | MICROVAR | C30 | 5 |
| * | 604006 | 5 WAY PLUG | PYE CONNECTORS. | MSP. | 1. |
| * | 611016 | SCREW POSI-PAN M3x8 | | | 4 |
| * | 613005 | SHAKEPROOF WASHER M3 | | | 4 |

NOTES. * FITTED AT FINAL ASSEMBLY.

SEE SHEET 2 FOR LATEST ISSUE

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| DATE 28-11-78 | datron ELECTRONICS LTD |
| DRAWN B.J. | TITLE ANALOGUE OUTPUT P.C.B ASSY. |
| CHECKED | |
| APPROVED | |
| DATE | DRAWING NUMBER 400308 — SHEET 4 OF 4 |

| DESIGNATOR | DATRON PART No. | DESCRIPTION | PRINCIPAL MANUFACTURER | MANUFACTURER'S PART No. | No. USED Per Assy. |
|---|---|---|---|---|---|
| R1 | 000104 | 100K 5% ¼W CARBON | MULLARD | CR25 | 15 |
| R2 | 000101 | 100R " " " | " | " | 4 |
| R3 | 000101 | 100R " " " | " | " | - |
| R4 | 000105 | 1M 10% " " | " | " | 11 |
| R5 | 000822 | 8K2 " " " | MULLARD | CR25 | 3 |
| R6 | 011302 | 13KO 1% 50ppm MF | HOLCO | HBC | 2 |
| R7 | 011302 | 13KO " " " | " | " | - |
| R8 | 000101 | 100R 5% ¼W CARBON | MULLARD | CR25 | - |
| R9 | | NOT USED | | | |
| R10 | 000101 | 100R 5% ¼W CARBON | " | " | - |
| R11 | | FSV | | CR25 | - |
| R12 | 000472 | 4k7 " " " | " | " | 12 |
| R13 | 000104 | 100k " " " | " | " | - |
| R14 | 000472 | 4k7 " " " | " | " | - |
| R15 | | FSV | | CR25 | - |
| R16 | 050038 | 6K34 1% 15ppm MF | ACI | EE-0-100-C4 | 2 |
| R17 | 050037 | 4K75 1% 15ppm MF | ACI | EE-0-100-C4 | 2 |
| R18 | | PART OF KIT WITH D59 | | | |
| R19 | | PART OF KIT WITH D60 | | | |
| R20 | 063203 | 20K POT CERMET - | BECKMAN | 72P | 1 |
| R21 | 000104 | 100K 5% ¼W CARBON | MULLARD | CR25 | - |
| R22 | 000102 | 1K " " " | " | " | 8 |
| R23 | 063504 | 500K POT CERMET | BECKMAN | 72P | 2 |

NOTES. CIRCUIT DIAGRAM = 430328
CHECK PROCEDURE = 460328
CHECK LIST = 470328
SEE SHEET 2 FOR LATEST ISSUE

| | 18 | 19 | 20 | 21 | 22 | 23 | 24 |
|---|---|---|---|---|---|---|---|
| | 1244.1248 | 1245,73 | 1262 | 1460 | 1512 | 645/1649 | 1659 |
| | 2.11.81 | 4.1.82 | 23.7.82 | 25.5.83 | 17.8.83 | 12.6.84 | 9.9.85 |
| | MD | MD | MD | MD | MD | MD | MD |

| ISS | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 |
|---|---|---|---|---|---|---|---|---|
| ECO | [illegible] | 1000 | [illegible] | 1098. 1107 | 1128. 1050. 1117 | 1144. 1168 | 1114. 1182. 1184. 1188. 1191. 1190. 1193. 1192 | 1217 |
| DATE | 29-10-79 | 18.1.80 | 27.2.80 | 15.4.80 | 2.6.80 | 23.9.80 | 5.1.81. | 18.8.81 |
| CHKD | MD | MD | MD | [illegible] | [illegible] | MD | [illegible] | MD |

DATE 12-7-78
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DATE

datron ELECTRONICS LTD

TITLE 1061 ANALOGUE PCB ASSEMBLY.

DRAWING NUMBER 400328 SHEET 2 OF 24

| DESIGNATOR | DATRON PART No. | DESCRIPTION | PRINCIPAL MANUFACTURER | MANUFACTURER'S PART No. | No. USED Per Assy. |
|---|---|---|---|---|---|
| R24 | 000824 | 820K 5% ¼W CARBON | MULLARD | CR25 | 2 |
| R25 | 000122 | 1K2 5% ¼W CARBON | MULLARD | CR25 | 1 |
| R26 | 000185 | 1M8 10% ¼W CARBON | " | " | 1 |
| R27 | 000275 | 2M7 5% ¼W CARBON | " | " | 3 |
| R28 | 000222 | 2K2 5% ¼W CARBON | " | " | 7 |
| R29 | 000100 | 10R " " " | " | " | 8 |
| R30 | 000100 | 10R " " " | " | " | - |
| R31 | 000473 | 47K " " " | " | " | 3 |
| R32 | 000393 | 39K " " " | " | " | 1 |
| R33 | 000473 | 47K " " " | " | " | - |
| R34 | 000102 | 1K " " " | " | " | - |
| R35 | 000104 | 100k " " " | " | " | - |
| R36 | 000104 | 100k " " " | " | " | - |
| R37 | 000562 | 5K6 " " " | " | " | 3 |
| R38 | 050034 | 825R 1% 15ppm MF | ACI | EE0-100 C4 | 2 |
| R39 | 050053 | 64R2 1% 1/10W 15ppm MF | " | EE-0-10-64R2-F-C4 | 2 |
| R40 | 050053 | 64R2 1% 1/10W 15ppm MF | " | EE-0-10-64R2-F-C4 | - |
| R41 | | NOT USED | | | - |
| R42 | 050031 | 196R 1% 15ppm MF | ACI | EE 0-100 C4 | 2 |
| R43 | 019768 | 97R6 1% 50ppm MF | HOLCO | HBC | 2 |
| R44 | | NOT USED | | | |
| R45 | | NOT USED | | | |
| R46 | 000182 | 1K8 5% ¼W CARBON | MULLARD | CR25 | 1 |

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TITLE 1061 ANALOGUE PCB ASSEMBLY

DRAWING NUMBER 400328 SHEET 3 OF 24

| DESIGNATOR | DATRON PART No | DESCRIPTION | PRINCIPAL MANUFACTURER | MANUFACTURER'S PART No | No. USED Per Assy |
|---|---|---|---|---|---|
| R47 | 000100 | 10R 5% 1/4W CARBON | MULLARD | CR25 | – |
| R48 | 000103 | 10K | | | 12 |
| R49 | 000103 | 10K | | | – |
| R50 | 000103 | 10K | | | – |
| R51 | 000100 | 10R | | | – |
| R52 | 000334 | 330K | | | 4 |
| R53 | 000334 | 330K | | | – |
| R54 | 000334 | 330K | | | – |
| R55 | 000334 | 330K | | | – |
| R56 | 000104 | 100K | | | – |
| R57 | 000221 | 220R | | | 3 |
| R58 | 000821 | 820R | | | 1 |
| R59 | 000563 | 56K | | | 6 |
| R60 | 000222 | 2K2 | | | – |
| R61 | 000105 | 1M0 10% 1/4W CARBON | | | – |
| R62 | 000105 | 1M0 | | | – |
| R63 | 000221 | 220R 5% 1/4W CARBON | | | – |
| R64 | | NOT USED | | | |
| R65 | 000102 | 1K 5% 1/4W CARBON | | | – |
| R66 | 000183 | 18K | | | 1 |
| R67 | 000562 | 5K6 | | | – |
| R68 | 018060 | 806R 1% 50ppm MF | HOLCO | H8 | 2 |
| R69 | 000114 | 110K 5% 1/4W CARBON | MULLARD | CR25 | 2 |

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TITLE 1061 ANALOGUE PCB ASSEMBLY.

DRAWING NUMBER 400328 SHEET 4 OF 24

| DESIGNATOR | DATRON PART No. | DESCRIPTION | PRINCIPAL MANUFACTURER | MANUFACTURER'S PART No. | No. USED Per Assy. |
|---|---|---|---|---|---|
| R70 | 018060 | 806R 1% 50 ppm MF | HOLCO | H8 | – |
| R71 | 070115 | 12K0 1% 10ppm WW | MANN | MX125 | 2 |
| R72 | 000472 | 4K7 5% 1/4W CARBON | MULLARD | CR25 | – |
| R73 | 000103 | 10K | | | – |
| R74 | 000275 | 2M7 | | | – |
| R75 | 000565 | 5M6 | | | 1 |
| R76 | 000106 | 10M 10% 1/4W CARBON | | | 2 |
| R77 | 000226 | 22M | ALLEN BRADLEY | CB2261 | 1 |
| R78 | 000473 | 47K 5% 1/4W CARBON | MULLARD | CR25 | – |
| R79 | 000392 | 3K9 | | | 2 |
| R80 | 000104 | 100K | | | – |
| R81 | 000472 | 4K7 | | | – |
| R82 | 000472 | 4K7 | | | – |
| R83 | 000472 | 4K7 | | | – |
| R84 | 011378 | 13R7 1% 1/8W MF | HOLCO | H8 | 1 |
| R85 | | NOT USED | | | |
| R86 | 000472 | 4K7 5% 1/4W CARBON | MULLARD | CR25 | – |
| R87 | 000114 | 110K | | | – |
| R88 | | NOT USED | | | – |
| R89 | 050031 | 196R 1% ppm MF | ACI | EE 0·100-C4 | – |
| R90 | 019768 | 97R6 1% 50ppm MF | HOLCO | H8C | – |
| R91 | | NOT USED | | | |
| R92 | | NOT USED | | | |

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TITLE 1061 ANALOGUE PCB ASSEMBLY.

DRAWING NUMBER 400328 SHEET 5 OF 24

| DESIGNATOR | DATRON PART No. | DESCRIPTION | PRINCIPAL MANUFACTURER | MANUFACTURER'S PART No. | No. USED Per Assy. |
|---|---|---|---|---|---|
| R93 | 000124 | 120K 5% 1/4W CARBON | MULLARD | CR25 | 2 |
| R94 | 000102 | 1K " " " | " | " | — |
| R95 | 000106 | 10M 10% " " | " | " | — |
| R96 | 011473 | 147K 1% 50ppm MF | HOLCO | H8 | 1 |
| R97 | | NOT USED | | | — |
| R98 | | NOT USED | | | — |
| R99 | 000472 | 4K7 5% 1/4W CARBON | MULLARD | CR25. | — |
| R100 | 000472 | 4K7 " " " | " | " | — |
| R101 | 000100 | 10R 5% 1/4W CARBON | MULLARD | CR25 | — |
| R102 | 000100 | 10R " " " | " | " | — |
| R103 | 000271 | 270R " " " | " | " | 4 |
| R104 | 000151 | 150R " " " | " | " | 1 |
| R105 | 000271 | 270R " " " | " | " | — |
| R106 | 000222 | 2k2 " " " | " | " | — |
| R107 | 000222 | 2k2 " " " | " | " | — |
| R108 | 090038 | 10K811 ATTEN. SET | MANN | | 1 SET |
| R109 | 090038 | 10K811 " | " | | — |
| R110 | 090038 | 9K " | " | | — |
| R111 | 090038 | 1K " | " | | — |
| R112 | 000682 | 6K8 5% 1/4W CARBON | MULLARD | CR25 | 1 |
| R113 | 000105 | 1MO 10% 1/4W CARBON | " | " | — |
| R114 | 042214 | 2M21.1% 100ppm CERMET FILM | ALLEN BRADLEY | TYPE CC | 1 |
| R115 | 041004 | 1M 1% 100ppm CERMET FILM | " | " | 1 |

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SHEET 6 OF 24

| DESIGNATOR | DATRON PART No. | DESCRIPTION | PRINCIPAL MANUFACTURER | MANUFACTURER'S PART No. | No. USED Per Assy. |
|---|---|---|---|---|---|
| R116 | 000105 | 1M 5% 1/4W CARBON | MULLARD | CR25 | — |
| R117 | 000105 | 1M " " " | " | " | — |
| R118 | 000105 | 1M " " " | " | " | — |
| R119 | 008012 | 27K 2W CARBON FILM | PIHER | " | 2 |
| R120 | 008012 | 27K " " " | " | " | — |
| R121 | 008011 | 22K " " " | " | " | 2 |
| R122 | 008011 | 22K " " " | " | " | — |
| R123 | 000225 | 2M2 5% 1/4W CARBON | MULLARD | CR25 | 2 |
| R124 | 011213 | 121K 1% 50ppm MF | HOLCO | H8 | 2 |
| R125 | 000225 | 2M2 5% 1/4 W CARBON | MULLARD | CR25 | — |
| R126 | 013651 | 3K65 1% 50 ppm MF | HOLCO | H8 | 1 |
| R127 | 041005 | 10MO 1% 1/2W 100ppm CF | ALLEN BRADLEY | CC | 1 |
| R128 | 042215 | 22M1 1% 100 ppm CF | ALLEN-BRADLEY | CC | 2 |
| R129 | 042215 | 22M1 " 100 ppm " | " | " | — |
| R130 | 000362 | 3K6 5% 1/4W CARBON | MULLARD | CR25 | 2 |
| R131 | 000362 | 3K6 " " " | " | " | — |
| R132 | 000105 | 1M " " " | " | " | — |
| R133 | 000105 | 1M " " " | " | " | — |
| R134 | 000394 | 390K " " " | " | " | 1 |
| R135 | 000275 | 2M7 " " " | " | " | — |
| R136 | 000395 | 3M9 " " " | " | " | 1 |
| R137 | 000223 | 22K " " " | " | " | 3 |
| R138 | 000125 | 1M2 " " " | " | " | 1 |

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SHEET 7 OF 24

| DESIGNATOR | DATRON PART No. | DESCRIPTION | PRINCIPAL MANUFACTURER | MANUFACTURER'S PART No. | No. USED Per Assy. |
|---|---|---|---|---|---|
| R139 | 000336 | 33M 10% ¼W CARBON | ALLEN-BRADLEY | CB3361 | 1 |
| R140 | 090049 | 18M MATCHED PAIR | HOLCO | } | 1 PAIR |
| R141 | 090049 | 18M " " | " | } | |
| R142 | 000272 | 2K7 5% ¼W CARBON | MULLARD | CR25 | 1 |
| R143 | 090039 | 3M3, 10MΩ INPUT ATTEN. SET | MANN | | 1 SET. |
| R144 | 000100 | 10R 5% ¼W CARBON | MULLARD | CR25 | – |
| R145 | 000100 | 10R " " " | " | " | – |
| R146 | 000222 | 2K2 " " " | " | " | – |
| R147 | 000752 | 7K5 " " " | " | " | 1 |
| R148 | 090039 | 100K, 10MΩ INPUT ATTEN. SET. | MANN | | – |
| R149 | 090039 | 3M3, " " " " | " | | – |
| R150 | 063204 | 200K POT CERMET | BECKMAN | 72P | 1 |
| R151 | 063205 | 2M POT CERMET | " | " | 1 |
| R152 | 011000 | 100R 1% MF (DO NOT SOLDER) | HOLCO | H8C | 1 |
| R153 | 011822 | 18K2 1% ⅛W MF | HOLCO | H8 | 1 |
| R154 | 000103 | 10K 5% ¼W CARBON | MULLARD | CR25 | – |
| R155 | 000221 | 220R " " " | " | " | – |
| R156 | 090039 | 3M3, 10MΩ INPUT ATTEN. SET | MANN | | – |
| R157 | 000103 | 10K 5% ¼W CARBON | MULLARD | CR25 | – |
| R158 | 000332 | 3K3 " " " | " | " | 1 |
| R159 | 063103 | 10K POT CERMET | BECKMAN | 72P | 1 |
| R160 | 063504 | 500K " " | " | " | – |
| R161 | 000104 | 100K 5% ¼W CARBON | MULLARD | CR25 | – |

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DRAWING NUMBER 400328 | SHEET 8 OF 24

| DESIGNATOR | DATRON PART No. | DESCRIPTION | PRINCIPAL MANUFACTURER | MANUFACTURER'S PART No. | No. USED Per Assy. |
|---|---|---|---|---|---|
| R162 | 000392 | 3K9 5% ¼W CARBON | MULLARD | CR25 | – |
| R163 | 000107 | 100M 10% ¼W CARBON | ALLEN-BRADLEY | CB1071 | 1 |
| R164 | 000104 | 100k 5% ¼W CARBON | MULLARD | CR25 | – |
| R165 | 000104 | 100k " " | " | " | – |
| R166 | 000563 | 56K 5% " " | " | " | – |
| R167 | 000562 | 5K6 " " " | " | " | – |
| R168 | 000563 | 56K " " " | " | " | – |
| R169 | 000563 | 56K " " " | " | " | – |
| R170 | 000564 | 560K " " " | " | " | 2 |
| R171 | 000564 | 560K " " " | " | " | – |
| R172 | 000335 | 3M3 10% ¼W CARBON | MULLARD | CR25 | 1 |
| R173 | 000680 | 68R 5% " " | " | " | 2 |
| R174 | 000152 | 1K5 " " " | " | " | 2 |
| R175 | 000822 | 8K2 " " " | " | " | – |
| R176 | 000680 | 68R " " " | " | " | – |
| R177 | 000152 | 1K5 " " " | " | " | – |
| R178 | 000822 | 8K2 " " " | " | " | – |
| R179 | 440067 | PART OF KIT | DATRON. | | 1 |
| R180 | 440067 | " " " | " | | – |
| R181 | 440067 | " " " | " | | – |
| R182 | 000472 | 4K7 5% ¼W CARBON | MULLARD | CR25 | – |
| R183 | 000472 | 4K7 5% " " | " | " | – |
| R184 | 000270 | 27R " " " | " | " | 2 |

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DRAWING NUMBER 400328 | SHEET 9 OF 24

| DESIGNATOR | DATRON PART No. | DESCRIPTION | PRINCIPAL MANUFACTURER | MANUFACTURER'S PART No | No. USED Per Assy. |
|---|---|---|---|---|---|
| R185 | 000270 | 27R 5% ¼W CARBON | MULLARD | CR25 | – |
| R186 | 000104 | 100K " " " | " | " | – |
| R187 | 000222 | 2K2 " " " | " | " | – |
| R188 | 000103 | 10K " " " | " | " | – |
| R189 | 000103 | 10K " " " | " | " | 2 |
| R190 | 000561 | 560R " " " | " | " | – |
| R191 | 000561 | 560R " " " | " | " | 1 |
| R192 | 000155 | 1M5 " " " | " | " | – |
| R193 | 000104 | 100K " " " | " | " | – |
| R194 | 011213 | 121K 1% ⅛W MF | HOLCO | H8 | – |
| R195 | 015112 | 5IK1 " " " | " | " | 1 |
| R196 | 000223 | 22K 5% ¼W CARBON | MULLARD | CR25 | – |
| R197 | 000222 | 2K2 " " " | " | " | – |
| R198 | 011002 | 10K 1% ⅛W MF | HOLCO | H8 | 1 |
| R199 | 008007 | 10R 5% 0·2W CARBON | MULLARD | CR16 | 2 |
| R200 | 008007 | 10R " " " | " | " | – |
| R201 | 000824 | 820K 5% ¼W CARBON | MULLARD | CR25 | – |
| R202 | 000103 | 10K " " " | " | " | – |
| R203 | 000104 | 100K " " " | " | " | – |
| R204 | 000105 | 1M " " " | " | " | – |
| R205 | 000105 | 1M " " " | " | " | – |
| R206 | 000563 | 56K " " " | " | " | – |
| R207 | 000103 | 10K " " " | " | " | – |

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DRAWING NUMBER 400328 SHEET 10 OF 24

| DESIGNATOR | DATRON PART No. | DESCRIPTION | PRINCIPAL MANUFACTURER | MANUFACTURER'S PART No. | No. USED Per Assy. |
|---|---|---|---|---|---|
| R208 | 000333 | 33K 5% ¼W CARBON | MULLARD | CR25 | – |
| R209 | 000563 | 56K " " " | " | " | – |
| R210 | 000103 | 10K " " " | " | " | – |
| R211 | 050038 | 6K34 1% 15 ppm MF | ACI | EE-0·100 C4 | – |
| R212 | 050034 | 825R 1% 15ppm MF | ACI | EE-0·100 C4 | – |
| R213 | 050037 | 4K75 1% 15ppm MF | ACI | EE-0·100 C4 | – |
| R214 | 070115 | 12KO 1% 10ppm WW | MANN | MX125 | – |
| R215 | 000271 | 270R 5% ¼W CARBON | MULLARD | CR25 | – |
| R216 | 000271 | 270R 5% ¼W CARBON | MULLARD | CR25 | – |
| R217 | | NOT USED | | | – |
| R218 | 090063 | P.T.C. THERMISTOR | TEXAS | TSP102K | 1 |
| R219 | 000224 | 220K 5% ¼W CARBON | MULLARD | CR25 | 3 |
| R220 | 000124 | 120k " " " | " | " | – |
| R221 | 000224 | 220K " " " | " | " | – |
| R222 | 000224 | 220K " " " | " | " | – |
| R223 | | | | | |
| R224 | 012212 | 22K1 1% ⅛W 50ppm MF | HOLCO | H8C | 2 |
| R225 | 012212 | 22K1 1% ⅛W 50ppm MF | HOLCO | H8C | – |
| R226 | 000223 | 22K 5% ¼W CARBON | MULLARD | CR25 | – |
| R227 | 000471 | 470R 5% ¼W CARBON | MULLARD | CR25. | 1 |
| R228 | | NOT USED | | | – |
| R229 | | NOT USED | | | – |
| R230 | | NOT USED | | | – |

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TITLE 1061 ANALOGUE PCB ASSEMBLY.

DRAWING NUMBER 400328 SHEET 11 OF 24

| DESIGNATOR | DATRON PART No | DESCRIPTION | PRINCIPAL MANUFACTURER | MANUFACTURER'S PART No | No. USED Per Assy. |
|---|---|---|---|---|---|
| R231 | 000104 | 100K 5% ¼W CARBON | MULLARD | CR25 | — |
| R232 | | NOT USED | | | — |
| R233 | 000102 | 1K 5% ¼W CARBON | MULLARD | CR25 | — |
| R234 | 000102 | 1K 5% ¼W CARBON | MULLARD | CR25 | — |
| R235 | 000102 | 1K 5% ¼W CARBON | MULLARD | CR25 | — |
| R236 | 016192 | 61k9 1% ⅛W 50ppm MF | HOLCO | H8C | 2 |
| R237 | 016192 | 61k9 1% ⅛W 50ppm MF | HOLCO | H8C | — |
| R238 | 000104 | 100K 5% ¼W CARBON | MULLARD | CR25 | — |
| R239 | 000102 | 1K 5% ¼W CARBON | MULLARD | CR25 | — |
| R240 | 000472 | 4k7 5% ¼W CARBON | MULLARD | CR25 | — |
| R241 | 000331 | 330R 5% ¼W CARBON | MULLARD | CR25 | 1 |
| R242 | 000103 | 10K 5% ⅓W CARBON | MULLARD | CR25 | — |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| AN1 | 090050 | 3K3 SIL NETWORK | BECKMAN | 764-1-R3·3K | 1 |
| AN2 | 090042 | R-2R LADDER NETWORK | ERIE | | 1 |
| | | | | | |
| | | | | | |
| C1 | 150020 | 10µF 20% 25V DIP TANT | UNION CARBIDE | K10E25 | 12 |
| C2 | 150020 | 10µF 20% 25V DIP TANT | UNION CARBIDE | K10E25 | — |
| C3 | 104017 | 0·5pF 500V CER DISC | ERIE | 831 | 1 |

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TITLE: 1061 ANALOGUE PCB ASSY.

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| DESIGNATOR | DATRON PART No. | DESCRIPTION | PRINCIPAL MANUFACTURER | MANUFACTURER'S PART No. | No. USED Per Assy. |
|---|---|---|---|---|---|
| C4 | 150020 | 10µF 20% 25V DIP TANT | UNION CARBIDE | K10E25 | — |
| C5 | 102471 | 470pF 500V CER DISC | ERIE | 801 | 3 |
| C6 | 150020 | 10µF 20% 25V DIP TANT | UNION CARBIDE | K10E25 | — |
| C7 | 150020 | 10µF " " " " | " " | " | — |
| C8 | 102150 | 15pF 500V CER DISC | ERIE | 801 | 1 |
| C9 | 140016 | 0·47µF 400V POLYPROP | RIFA | PHE 412 HFK | 1 |
| C10 | 110015 | 0·015µF 63V POLYESTER | WIMA | FKS2 | 1 |
| C11 | 120026 | 680pF 20% 100v POLYCARB | WIMA | FKC2 MIN | 1 |
| C12 | 120004 | 680nF 10% 63v POLYCARB | ASHCROFT | A2B6811B | 1 |
| C13 | 102101 | 100pF 500V CER DISC | ERIE | 801 | 3 |
| C14 | 150020 | 10µF 20% 25V DIP TANT | UNION CARBIDE | K10E25 | — |
| C15 | 150020 | 10µF " " " " | " " | " | — |
| C16 | 102101 | 100pF 500V CER DISC | ERIE | 801 | — |
| C17 | 102100 | 10pF 500V CER DISC | ERIE | 801 | 1 |
| C18 | 150020 | 10µF 20% 25V DIP TANT | UNION CARBIDE | K10E25 | — |
| C19 | 150020 | 10µF " " " " | " " | " | — |
| C20 | 102470 | 47pF 500V CER DISC | ERIE | 801 | 4 |
| C21 | 102470 | 47pF 500V CER DISC | ERIE | 801 | — |
| C22 | 102101 | 100pF 500V CER DISC | " | " | — |
| C23 | 101103 | 0·01µF 250V CER DISC | " | " | 6 |
| C24 | 101103 | 0·01µF 250V CER DISC | " | " | — |
| C25 | 150020 | 10µF 20% 25V DIP TANT | UNION CARBIDE | K10E25 | — |
| C26 | 102471 | 470pF 500V CER DISC | ERIE | 801 | — |

NOTES.

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TITLE: 1061 ANALOGUE PCB ASSEMBLY.

DRAWING NUMBER: 400328 SHEET: 13 OF 24

| DESIGNATOR | DATRON PART No. | DESCRIPTION | PRINCIPAL MANUFACTURER | MANUFACTURER'S PART No. | No. USED Per Assy |
|---|---|---|---|---|---|
| C27 | 101103 | 0·01μF 250V CER DISC | ERIE | 801 | – |
| C28 | 102470 | 47pF 500V " " | " | " | – |
| C29 | 102470 | 47pF 500V " " | " | " | – |
| C30 | | NOT USED | | | |
| C31 | 130073 | 1nF 5% 160V POLYSTYRENE | SUFLEX | HSC1000/5-10/160 | 1 |
| C32 | 101103 | 0·01μF 250V CER DISC | ERIE | 801 | – |
| C33 | 110013 | 0·1μF 10% 250V POLYESTER | MULLARD | C280AE/P100K | 3 |
| C34 | 101103 | 0·01μF 250V CER DISC | ERIE | 801 | – |
| C35 | 120016 | 2n2F 20% 100V POLYCARB | WIMA | FKC2MIN. | 1 |
| C36 | 102471 | 470pF 500V CER DISC | " | " | – |
| C37 | 110013 | 0·1μF 10% 250V POLYESTER | MULLARD | C280AE/P100K | – |
| C38 | 102102 | 1nF 10% 500V CER DISC | ITT | CD10 | 2 |
| C39 | 440067 | PART OF KIT | DATRON. | | – |
| C40 | 440067 | " " " | " | | – |
| C41 | 440067 | " " " | " | | – |
| C42 | 110013 | 0·1μF 10% 250V POLYESTER | MULLARD | C280AE/P100K | – |
| C43 | 150020 | 10μF 20% 25V DIP TANT | UNION CARBIDE | K10E25 | – |
| C44 | 150020 | 10μF " " " " | " " | " | – |
| C45 | 180006 | 47μF-25V AL.ELECT | MULLARD | 016-16479 | 2 |
| C46 | 180006 | 47μF 25V " | " | " | – |
| C47 | 180022 | 33μF 40V " | " | 016-17339 | 2 |
| C48 | 180022 | 33μF 40V " | " | " | – |
| C49 | 180024 | 10μF 63V AL.ELECT | MULLARD | 016-18109 | 2 |

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TITLE 1061 ANALOGUE PCB ASSEMBLY

DRAWING NUMBER 400328 SHEET 14 OF 24

| DESIGNATOR | DATRON PART No. | DESCRIPTION | PRINCIPAL MANUFACTURER | MANUFACTURER'S PART No. | No. USED Per Assy |
|---|---|---|---|---|---|
| C50 | 180024 | 10μF 63V AL.ELECT | MULLARD | 016-18109 | – |
| C51 | 101103 | 0·01μF 250V CER DISC | ERIE | 801 | – |
| C52 | 110017 | 0·022μF 10% 250V POLYESTER | MULLARD | C280AE/P22K | 1 |
| C53 | 102332 | 3n3F 500V CER DISC | ERIE | 801 | 2 |
| C54 | 102332 | 3n3F " " " | " | " | – |
| C55 | 440067 | PART OF KIT. | DATRON. | | – |
| C56 | 150016 | 1μF 20% 35V DIP TANT | UNION CARBIDE | K1R0E35 | 1 |
| C57 | 130013 | 18pF ±1pF 160V POLYSTYRENE | SUFLEX | HS | 1 |
| C58 | 110027 | 3300pF 20% 100V POLYESTER | WIMA | FKS2-MIN | 1 |
| C59 | | NOT USED | | | – |
| C60 | 102222 | 2n2F 500V CER DISC | ERIE | 801 | 1 |
| C61 | | NOT USED | | | |
| C62 | | NOT USED | | | |
| C63 | | NOT USED | | | |
| C64 | 102102 | 1nF 10% 500V CER DISC | ITT | CD10 | – |
| | | | | | |
| | | | | | |
| D1 | 200008 | Si LOW LEAKAGE | FAIRCHILD | 1N458A | 25 |
| D2 | 210056 | C5V6 400mW ZENER | MULLARD | BZY88C | 2 |
| D3 | 200008 | Si LOW LEAKAGE | FAIRCHILD | 1N458A | – |
| D4 | 210056 | C5V6 400mW ZENER | MULLARD | BZY88C | – |
| D5 | 200001 | Si GEN. PURPOSE | FAIRCHILD | 1N4148 | 19 |
| D6 | 200008 | Si LOW LEAKAGE | FAIRCHILD | 1N458A | – |

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| DESIGNATOR | DATRON PART No. | DESCRIPTION | PRINCIPAL MANUFACTURER | MANUFACTURER'S PART No. | No. USED Per Assy. |
|---|---|---|---|---|---|
| D7 | 200008 | Si LOW LEAKAGE | FAIRCHILD | 1N458A | – |
| D8 | 210082 | CBV2 400mW ZENER | MULLARD | BZY88C | 1 |
| D9 | 200008 | Si LOW LEAKAGE | FAIRCHILD | 1N458A | – |
| D10 | 200008 | " " " | " | " | – |
| D11 | 200008 | " " " | " | " | – |
| D12 | 200001 | Si GEN PURPOSE | FAIRCHILD | 1N4148 | – |
| D13 | 200001 | " " " | " | " | – |
| D14 | 200001 | " " " | " | " | – |
| D15 | 200001 | " " " | " | " | – |
| D16 | 200008 | Si LOW LEAKAGE | FAIRCHILD | 1N458A | – |
| D17 | 200008 | " " " | " | " | – |
| D18 | 210068 | C6V8 400mW ZENER | MULLARD | BZY88C | 2 |
| D19 | 210068 | " " " | " | " | – |
| D20 | 200008 | Si LOW LEAKAGE | FAIRCHILD | 1N458A | – |
| D21 | 200001 | Si GEN PURPOSE | FAIRCHILD | 1N4148 | – |
| D22 | 210220 | C22V 400mW ZENER | MULLARD | BZY88C | 2 |
| D23 | 210220 | " " " | " | " | – |
| D24 | 200001 | Si GEN PURPOSE | FAIRCHILD | 1N4148 | – |
| D25 | 200008 | Si LOW LEAKAGE | FAIRCHILD | 1N458A | – |
| D26 | 200008 | " " " | " | " | – |
| D27 | 200008 | " " " | " | " | – |
| D28 | 200008 | " " " | " | " | – |
| D29 | 200008 | " " " | " | " | – |

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| DESIGNATOR | DATRON PART No. | DESCRIPTION | PRINCIPAL MANUFACTURER | MANUFACTURER'S PART No. | No. USED Per Assy. |
|---|---|---|---|---|---|
| D30 | 200008 | Si LOW LEAKAGE | FAIRCHILD | 1N458A | – |
| D31 | 200001 | Si GEN PURPOSE | FAIRCHILD | 1N4148 | – |
| D32 | 200001 | " " " | " | " | – |
| D33 | 200001 | " " " | " | " | – |
| D34 | 200001 | " " " | " | " | – |
| D35 | 210047 | C4V7 400mW ZENER | MULLARD | BZY88C | 2 |
| D36 | 200008 | Si LOW LEAKAGE | FAIRCHILD | 1N458A | – |
| D37 | 200008 | " " " | " | " | – |
| D38 | 200008 | " " " | " | " | – |
| D39 | 200008 | " " " | " | " | – |
| D40 | 200001 | Si GEN PURPOSE | FAIRCHILD | 1N4148 | – |
| D41 | 200001 | Si GEN PURPOSE | FAIRCHILD | 1N4148 | – |
| D42 | 200001 | " " " | " | " | – |
| D43 | 200002 | Si RECTIFIER 1A.50V. | MOTOROLA | 1N4001 | 4 |
| D44 | 200002 | " " " | " | " | – |
| D45 | 200002 | " " " | " | " | – |
| D46 | 200002 | " " " | " | " | – |
| D47 | 210150 | C15V 400mW ZENER | MULLARD | BZY88C | 1 |
| D48 | 200001 | Si GEN PURPOSE | FAIRCHILD | 1N4148 | – |
| D49 | 210200 | C20V 400mW ZENER | MULLARD | BZY88C | 2 |
| D50 | 210100 | C10V 400mW ZENER | MULLARD | BZY88C | 2 |
| D51 | 210100 | " " " | " | " | |
| D52 | 210200 | C20V 400mW ZENER | MULLARD | BZY88C | – |

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| DESIGNATOR | DATRON PART No | DESCRIPTION | PRINCIPAL MANUFACTURER | MANUFACTURER'S PART No. | No. USED Per Assy. |
|---|---|---|---|---|---|
| D53 | 200008 | Si LOW LEAKAGE | FAIRCHILD | IN458A | – |
| D54 | 200008 | " " " | " | " | – |
| D55 | 200001 | Si GEN PURPOSE | " | IN4148 | – |
| D56 | 200001 | " " " | " | " | – |
| D57 | | NOT USED | | | – |
| D58 | | NOT USED | | | – |
| D59 | 219007 | 214013 SELECTED WITH R18 | | | 2 |
| D60 | 219007 | 214013 SELECTED WITH R19 | | | – |
| D61 | 210033 | C3V3 400 mW ZENER | MULLARD | BZY88C3V3 | 2 |
| D62 | 210033 | " " " " | " | " | – |
| D63 | 200001 | Si GEN PURPOSE | FAIRCHILD | IN4148 | – |
| D64 | 210120 | 12V 400mW ZENER | MULLARD | BZY88C12 | 2 |
| D65 | 210120 | 12V 400mW ZENER | MULLARD | BZY88C12 | – |
| D66 | 200008 | Si LOW LEAKAGE | FAIRCHILD | IN458A | – |
| D67 | 200008 | " " " | " | " | – |
| D68 | 200008 | " " " | " | " | – |
| D69 | | NOT USED | | | |
| D70 | | NOT USED | | | |
| D71 | 210047 | 4V7 400mw ZENER | MULLARD | BZY88C4V7 | – |
| D72 | 200001 | Si GEN PURPOSE | FAIRCHILD | IN4148 | – |
| D73 | 213009 | 15V 5W ZENER DIODE | UNITRODE | TVS 515 | 2 |
| D74 | 213009 | 15V 5W ZENER DIODE | UNITRODE | TVS 515 | – |

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TITLE 1061 ANALOGUE PCB ASSEMBLY

DRAWING NUMBER 400328

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| DESIGNATOR | DATRON PART No. | DESCRIPTION | PRINCIPAL MANUFACTURER | MANUFACTURER'S PART No. | No. USED Per Assy. |
|---|---|---|---|---|---|
| Q1 | 230001 | N CHAN CURRENT LIM | SILICONIX | E506 | 2 |
| Q2 | 250008 | SIL PNP TRANSISTOR | NATIONAL | BC214C/TO18 | 2 |
| Q3 | 250008 | SIL PNP TRANSISTOR | NATIONAL | BC214C/TO18 | – |
| Q4 | 230001 | N CHAN CURRENT LIM | SILICONIX | E506 | – |
| Q5 | 230027 | LOW LEAKAGE N-FET | TELEDYNE | U3114 | 7 |
| Q6 | 230027 | " " " | " | " | – |
| Q7 | 230027 | " " " | " | " | – |
| Q8 | 230027 | " " " | " | " | – |
| Q9 | 230027 | " " " | " | " | – |
| Q10 | 230027 | " " " | " | " | – |
| Q11 | 230027 | " " " | " | " | – |
| Q12 | 240017 | LOW DRIFT DUAL NPN TRAN'S | NATIONAL | LM394 | 1 |
| Q13 | 230002 | N-CHAN J-FET | TELEDYNE | U1994E | 6 |
| Q14 | 230002 | " " | " | " | – |
| Q15 | 230002 | " " | " | " | – |
| Q16 | 230002 | " " | " | " | – |
| Q17 | | NOT USED | | | |
| Q18 | 230002 | N-CHAN J-FET | TELEDYNE | U1994E | – |
| Q19 | 230002 | " " | " | " | – |
| Q20 | 240006 | Si NPN | FAIRCHILD | 2N3904 | 4 |
| Q21 | 240006 | " " | " | " | – |
| Q22 | 240006 | " " | " | " | – |
| Q23 | 240006 | " " | " | " | – |

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| DESIGNATOR | DATRON PART No | DESCRIPTION | PRINCIPAL MANUFACTURER | MANUFACTURER'S PART No | No USED Per Assy |
|---|---|---|---|---|---|
| Q24 | 240014 | Si NPN | FAIRCHILD | BC337 | 2 |
| Q25 | 250011 | Si PNP | " | BC327 | 2 |
| Q26 | 250011 | " " | " | " | – |
| Q27 | 250001 | Si PNP | " | BC214 | 2 |
| Q28 | 240014 | Si NPN | " | BC337 | – |
| Q29 | 240001 | Si NPN | " | BC184 | 3 |
| Q30 | 240009 | Si NPN | NATIONAL | 2N5550 | 1 |
| Q31 | 250009 | Si PNP | " | 2N5401 | 1 |
| Q32 | 240001 | Si NPN | " | BC184 | – |
| Q33 | 240001 | Si NPN | " | BC184 | – |
| Q34 | 250001 | Si PNP | " | BC214 | – |
| Q35 | 230031 | N-CHAN DUAL JFET | TELEDYNE | SU2656M | 3 |
| Q36 | 230031 | N-CHAN DUAL JFET | TELEDYNE | SU2656M | – |
| Q37 | 230031 | N-CHAN DUAL JFET | TELEDYNE | SU2656M | – |

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TITLE: 1061 ANALOGUE PCB ASSEMBLY

DRAWING NUMBER: 400328 SHEET 20 OF 24

| DESIGNATOR | DATRON PART No. | DESCRIPTION | PRINCIPAL MANUFACTURER | MANUFACTURER'S PART No. | No. USED Per Assy. |
|---|---|---|---|---|---|
| M1 * | 220030 | Hi SPEED OPTO SELECTED | DATRON | HP4351 (RED) | 2 |
| M2 | 220017 | DUAL OPTO ISOLATOR | FAIRCHILD | FCD880 | 7 |
| M3 | 260002 | LINEAR IC OP. AMP. | " | 741HC | 3 |
| M4 | 220029 | Hi SPEED OPTO SELECTED | DATRON | HP4351 (WHITE) | 2 |
| M5 | 220029 | " " " | " | HP4351 (WHITE) | – |
| M6 * | 220030 | " " " | | HP4351 (RED) | – |
| M7 | 220017 | 2K5V DUAL OPTO ISOLATOR | FAIRCHILD | FCD880 | – |
| M8 | 220017 | " " " | " | " | – |
| M9 | 220017 | " " " | " | " | – |
| M10 | 220017 | " " " | " | " | – |
| M11 | 220017 | " " " | " | " | – |
| M12 | 280075 | DUAL 4 I/P NAND | MOTOROLA | MC14012 BCP | 1 |
| M13 | 280015 | QUAD LATCH | MOTOROLA | MC14076 BCP | 4 |
| M14 | 280015 | " " | | " | – |
| M15 | 260029 | VOLTAGE COMPARATOR | NATIONAL | LM311 HC | 1 |
| M16 | 280082 | HEX INVERTER | FAIRCHILD | F40014 BPC | 1 |
| M17 | 280079 | QUAD 2 I/P OR GATE | MOTOROLA | MC14071 BCP | 1 |
| M18 | 280008 | QUAD 2 I/P NAND GATE | " | MC14011 BCP | 3 |
| M19 | 280008 | " " " " " | " | " | – |
| M20 | 280015 | QUAD LATCH | " | MC14076 BCP | – |
| M21 | 280015 | " " | " | " | – |
| M22 | 260057 | 5534 OP AMP (DIL) | SIGNETICS | NE5534N | 1 |
| M23 | 220019 | DUAL OPTO ISOLATOR | FAIRCHILD | FCD880/SELECTED | 1 |

NOTES. * ALTERNATIVE HP4351 (220018)

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| DESIGNATOR | DATRON PART No. | DESCRIPTION | PRINCIPAL MANUFACTURER | MANUFACTURER'S PART No. | No. USED Per Assy. |
|---|---|---|---|---|---|
| M24 | 220017 | DUAL OPTO ISOLATOR | FAIRCHILD | FCD880 | – |
| M25 | 260069 | 411 OP. AMP. | NATIONAL | LF411CH | 3 |
| M26 | 280022 | QUAD BILATERAL SWITCH | MOTOROLA | MC14016 BCP | 1 |
| M27 | 280008 | QUAD 2 I/P NAND GATE | " | MC14011 BCP | – |
| M28 | 280044 | BINARY UP/DOWN COUNTER | " | MC14516 BCP | 1 |
| M29 | 280011 | DUAL D FLIP-FLOP | " | MC14013 BCP | 1 |
| M30 | 260026 | LINEAR IC OP. AMP. | NATIONAL | LM212H | 2 |
| M31 | 260069 | 411 OP. AMP | " | LF411CH | – |
| M32 | 260026 | LINEAR IC OP AMP | " | LM212H | – |
| M33 | 260002 | " " " " | FAIRCHILD | 741 HC | – |
| M34 | 260069 | 411 OP AMP | NATIONAL | LF411CH | – |
| M35 * | 290082 | 4051 MUX. SELECTED | DATRON | MC14051 BCL (GREEN) | 1 |
| M36 | 260002 | 741 OP AMP | FAIRCHILD | μA 741 HC | – |
| M37 | | NOT USED. | | | |
| M38 | | NOT USED | | | |
| M39 | 260028 | DUAL LINEAR I.C. | FAIRCHILD | μA1458CTC | 1 |

NOTES. * ALTERNATIVE 290081 MC14051BCL (WHITE)

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| DESIGNATOR | DATRON PART No. | DESCRIPTION | PRINCIPAL MANUFACTURER | MANUFACTURER'S PART No. | No. USED Per Assy. |
|---|---|---|---|---|---|
| RL1 | 330018 | RELAY 2P2W 7v HOLD IN | P&B | SEE DRAWING | 1 |
| RL2 | 330017 | RELAY 1P.2W MINATURE | OMROM | G2E 184PH (12VDC) | 1 |
| | | | | | |
| | 400379/1 | WIRE / TERMINAL ASSY | | | 7 |
| | 400379/2 | " " " | | | 4 |
| | | | | | |
| | | | | | |
| | 410095-8A | P.C.B. | | | 1 |
| | 459112 | RELAY BRACKET | KDP | | 1 |
| | | | | | |
| | 540002 | 22 SWG. TINNED COPPER WIRE | | | A/R |
| | 512999 | 7/0.2 PTFE INSUL WHITE WIRE | | | 165mm |
| | 590001 | SLEEVE MAXCABLE Ø 3.0 | HELLERMANN ELECTRIC | H15 x 20 mm BLK HELSYN | 5 |
| | 590004 | SLEEVE – PTFE 1mm | –"– –"– | FE10 | A/R |
| | 590055 | SLEEVE Ø1.0 SIL RUBBER | –"– –"– | HIS CONT. BLACK | 250mm |
| J3 | 571075/C | 16 WAY AP/3M RIBBON CABLE | DATRON | | 1 |
| | 602001 | F.S.V. TERMINAL | MOLEX | 02-04-1875 | 6 |
| J2,4,5 | 605002 | 16 WAY DIL SOCKET | JERMYN | A23-2001/Y | 3 |
| | 605060 | 14 WAY DIL SOCKET | ASTRALUX | ICL143-S3T | 8 |
| | 605061 | 16 WAY DIL SOCKET | ASTRALUX | ICL143-S6T | 12 |
| J1&J6 | 605052 | 8 WAY POLARISED SOCKET | MOLEX | 22-01-2085 | 2 |
| | 605059 | 8 WAY DIL SOCKET | ASTRALUX | ICL-083-S6T | 5 |
| | 606005 | CLIP FOR 605002 | ANTIFERENCE | RC-74 | 3 |

NOTES.

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DATE 12-7-78
DRAWN B.J.
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datron ELECTRONICS LTD

TITLE 1061 ANALOGUE PCB ASSEMBLY

DRAWING NUMBER 400328 SHEET 23 OF 24

| DESIGNATOR | DATRON PART No. | DESCRIPTION | PRINCIPAL MANUFACTURER | MANUFACTURER'S PART No. | No. USED Per Assy. |
|---|---|---|---|---|---|
| | 606001 | LOCKING HOOD | PYE CONNECTORS | MHN | 1 |
| | 606002 | NUT | " " | MN | 1 |
| | 606003 | WASHER | " " | MLW | 1 |
| | 612019 | STANDOFF LOCKING TYPE 7/8" NYLON: RICHCO | | LCBS-14R | 4 |
| | 620003 | SOLDER PCB TERMINAL LUG | HARWIN | H2105A | 2 |
| | 630024 | INSULATING BEADS, STEATITE. | | (TYPE No 2) | 8. |
| | 620007 | TEST POINT TERMINAL | MICROVAR | C30 | 5 |
| * | 604006 | 5 WAY PLUG | PYE CONNECTORS. | MSP. | 1. |
| * | 611016 | SCREW POSI-PAN M3x8 | | | 4 |
| * | 613005 | SHAKEPROOF WASHER M3 | | | 4 |

NOTES.* FITTED AT FINAL ASSEMBLY.

SEE SHEET 2 FOR LATEST ISSUE

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| DATE 28-11-78 | datron ELECTRONICS LTD |
| DRAWN B.V. | TITLE ANALOGUE OUTPUT P.C.B ASSY. |
| CHECKED | |
| APPROVED | |
| DATE | DRAWING NUMBER 400308 — SHEET 4 OF 4 |

| DESIGNATOR | DATRON PART No | DESCRIPTION | PRINCIPAL MANUFACTURER | MANUFACTURER'S PART No | No. USED Per Assy |
|---|---|---|---|---|---|
| R1 | 000104 | 100K 5% ¼W CARBON | MULLARD | CR25 | 15 |
| R2 | 000101 | 100R " " " | " | " | 4 |
| R3 | 000101 | 100R " " " | " | " | - |
| R4 | 000105 | 1M 10% " " | " | " | 11 |
| R5 | 000822 | 8K2 " " " | MULLARD | CR25 | 3 |
| R6 | 011302 | 13KO 1% 50ppm MF | HOLCO | HBC | 2 |
| R7 | 011302 | 13KO " " " | " | " | - |
| R8 | 000101 | 100R 5% ¼W CARBON | MULLARD | CR25 | - |
| R9 | | NOT USED | | | |
| R10 | 000101 | 100R 5% ¼W CARBON | " | " | - |
| R11 | | FSV | | CR25 | - |
| R12 | 000472 | 4k7 " " " | " | " | 12 |
| R13 | 000104 | 100k " " " | " | " | - |
| R14 | 000472 | 4k7 " " " | " | " | - |
| R15 | | FSV | | CR25 | - |
| R16 | 050038 | 6K34 1% 15ppm MF | ACI | EE-0·100-C4 | 2 |
| R17 | 050037 | 4K75 1% 15ppm MF | ACI | EE-0·100-C4 | 2 |
| R18 | | PART OF KIT WITH D59 | | | |
| R19 | | PART OF KIT WITH D60 | | | |
| R20 | 063203 | 20K POT CERMET | BECKMAN | 72P | 1 |
| R21 | 000104 | 100K 5% ¼W CARBON | MULLARD | CR25 | - |
| R22 | 000102 | 1K " " " | " | " | 8 |
| R23 | 063504 | 500K POT CERMET | BECKMAN | 72P | 2 |

NOTES. CIRCUIT DIAGRAM = 430328
CHECK PROCEDURE = 460328
CHECK LIST = 470328
SEE SHEET 2 FOR LATEST ISSUE

| | 18 | 19 | 20 | 21 | 22 | 23 | 24 |
|---|---|---|---|---|---|---|---|
| | 1244.1248 | 1245,73 | 1282 | 1460 | 1512 | 1645/1649 | 1659 |
| | 2.11.81 | 4·1·82 | 23·7·82 | 25.5.83 | 17·8·83 | 12·684 | 19.9.84 |
| | MD | MD | MD | MD | MD | MD | MD |

| ISS | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 |
|---|---|---|---|---|---|---|---|---|
| ECO | [illegible] | 1000 | [illegible] | 1098. 1107 | 1128. 1050. 1117 | 1144. 1168 | 1114. 1182. 1184. 1188. 1191. 1190. 1193. 1192 | 12.17 |
| DATE | 28-10-79 | 18.1.80 | 27.2.80 | 15.4.80 | 2.6.80 | 23.9.80 | 5.1.81. | 18.8.81 |
| CHKD | MD | MD | MD | [illegible] | [illegible] | [illegible] | [illegible] | MD |

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TITLE 1061 ANALOGUE PCB ASSEMBLY.
DRAWING NUMBER 400328
SHEET 2 OF 24

| DESIGNATOR | DATRON PART No. | DESCRIPTION | PRINCIPAL MANUFACTURER | MANUFACTURER'S PART No. | No. USED Per Assy. |
|---|---|---|---|---|---|
| R24 | 000824 | 820K 5% ¼W CARBON | MULLARD | CR25 | 2 |
| R25 | 000122 | 1K2 5% ¼W CARBON | MULLARD | CR25 | 1 |
| R26 | 000185 | 1M8 10% ¼W CARBON | " | " | 1 |
| R27 | 000275 | 2M7 5% ¼W CARBON | " | " | 3 |
| R28 | 000222 | 2K2 5% ¼W CARBON | " | " | 7 |
| R29 | 000100 | 10R " " " | " | " | 8 |
| R30 | 000100 | 10R " " " | " | " | - |
| R31 | 000473 | 47K " " " | " | " | 3 |
| R32 | 000393 | 39K " " " | " | " | 1 |
| R33 | 000473 | 47K " " " | " | " | - |
| R34 | 000102 | 1K " " " | " | " | - |
| R35 | 000104 | 100k " " " | " | " | - |
| R36 | 000104 | 100k " " " | " | " | - |
| R37 | 000562 | 5K6 " " " | " | " | 3 |
| R38 | 050034 | 825R 1% 15ppm MF | ACI | EE0·100 C4 | 2 |
| R39 | 050053 | 64R2 1% 1/10W 15ppm MF | " | EE-0·10-64R2-F-C4 | 2 |
| R40 | 050053 | 64R2 1% 1/10W 15ppm MF | " | EE-0·10-64R2-F-C4 | - |
| R41 | | NOT USED | | | - |
| R42 | 050031 | 196R 1% 15ppm MF | ACI | EE 0·100 C4 | 2 |
| R43 | 019768 | 97R6 1% 50ppm MF | HOLCO | HBC | 2 |
| R44 | | NOT USED | | | |
| R45 | | NOT USED | | | |
| R46 | 000182 | 1K8 5% ¼W CARBON | MULLARD | CR25 | 1 |

NOTES.

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TITLE 1061 ANALOGUE PCB ASSEMBLY.
DRAWING NUMBER 400328
SHEET 3 OF 24

| DESIGNATOR | DATRON PART No. | DESCRIPTION | PRINCIPAL MANUFACTURER | MANUFACTURER'S PART No. | No. USED Per Assy. |
|---|---|---|---|---|---|
| R47 | 000103 | 10k 5% ¼W CARBON | MULLARD | CR25 | — |
| R48 | 000104 | 100k " " " | " | " | — |
| R49 | 000103 | 10k " " " | " | " | — |
| R50 | 000104 | 100k " " " | " | " | — |
| R51 | 000562 | 5k6 " " " | " | " | 1 |
| R52 | 000224 | 220k " " " | " | " | 1 |
| R53 | 000123 | 12k " " " | " | " | 1 |
| R54 | 000105 | 1M " " " | " | " | 1 |
| R55 | 000684 | 680k " " " | " | " | — |
| R56 | 000823 | 82 k " " " | " | " | 1 |
| R57 | | NOT USED | | | — |
| R58 | 000100 | 10R " " " | " | " | 2 |
| R59 | 000220 | 22R " " " | " | " | 2 |
| R60 | 000220 | 22R " " " | " | " | — |
| R61 | 000100 | 10R " " " | " | " | — |
| R62 | | NOT USED | | | — |
| R63 | 000222 | 2k2 5% ¼W CARBON | MULLARD | CR25 | — |
| R64 | 000222 | 2k2 " " " | " | " | — |
| R65 | 000103 | 10k " " " | " | " | — |
| R66 | 000103 | 10k " " " | " | " | — |
| R67 | 000271 | 270R " " " | " | " | 1 |
| R68 | 000103 | 10k " " " | " | " | — |
| R69 | 000561 | 560R " " " | " | " | 1 |

NOTES.

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| APPROVED | |
| DATE | DRAWING NUMBER 400329 — SHEET 4 OF 16 |

J.W. 1164

| DESIGNATOR | DATRON PART No. | DESCRIPTION | PRINCIPAL MANUFACTURER | MANUFACTURER'S PART No. | No. USED Per Assy. |
|---|---|---|---|---|---|
| R70 | 000222 | 2k2 5% ¼W CARBON | MULLARD | CR25 | — |
| R71 | 000102 | 1k " " " | " | " | — |
| R72 | 000221 | 220R " " " | " | " | — |
| R73 | 000102 | 1k " " " | " | " | — |
| R74 | 000124 | 120k " " " | " | " | 1 |
| R75 | 000471 | 470R " " " | " | " | 1 |
| R76 | 000824 | 820k " " " | " | " | 1 |
| R77 | | NOT USED | | | — |
| R78 | | NOT USED | | | — |
| R79 | 000472 | 4k7 " " " | " | " | — |
| R80 | 000683 | 68k " " " | " | " | — |
| R81 | 000183 | 18k " " " | " | " | 1 |
| R82 | 000334 | 330k " " " | " | " | 1 |
| R83 | 063202 | 2K POT CERMET | BECKMAN | 72 P | 1 |
| R84 | 000223 | 22k 5% ¼W CARBON | MULLARD | CR25 | 1 |
| R85 | 000472 | 4k7 " " " | " | " | — |
| R86 | | NOT USED | | | — |
| R87 | 000104 | 100k | | | — |
| R88 | 000103 | 10k " " " | " | " | — |
| R89 | 000103 | 10k " " " | " | " | — |
| R90 | | NOT USED | | | — |
| R91 | 012002 | 20kΩ 1% ⅛W 50ppm MF | HOLCO | H8C | 1 |
| R92 | 015231 | 5k23 " " " | " | " | 1 |

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| DATE | DRAWING NUMBER 400329 — SHEET 5 OF 16 |

J.W. 1164

| DESIGNATOR | DATRON PART No. | DESCRIPTION | PRINCIPAL MANUFACTURER | MANUFACTURER'S PART No. | No. USED Per Assy. |
|---|---|---|---|---|---|
| R93 | | NOT USED | | | — |
| R94 | 000102 | 1k 5% ¼W CARBON | MULLARD | CR25 | — |
| R95 | 000472 | 4k7 " " " | " | " | — |
| R96 | 000103 | 10k " " " | " | " | — |
| R97 | 000222 | 2k2 " " " | " | " | — |
| R98 | | NOT USED | | | — |
| R99 | 000104 | 100k 5% ¼W CARBON | " | " | — |
| R100 | 000104 | 100k " " | " | " | — |
| R101 | 000684 | 680k " " | " | " | — |
| R102 | 000103 | 10k " " " | " | " | — |
| R103 | 000222 | 2k2 " " | " | " | — |
| R104 | 000102 | 1k " " | " | " | — |
| | | | | | |
| | | | | | |
| | | | | | |
| AN1 | 090046 | 10k x 7 2% NETWORK | BECKMAN | 764-1-R10k | 5 |
| AN2 | | NOT USED | | | — |
| AN3 | 090046 | 10k x 7 2% NETWORK | BECKMAN | 764-1-R10K | — |
| AN4 | 090042 | 8 BIT 'R-2R' LADDER NETWORK | SEE DRG | | 1 |
| AN5 | 090046 | 10k x 7 2% NETWORK | BECKMAN | 764-1-R10k | — |
| AN6 | 090046 | 10k x 7 2% NETWORK | BECKMAN | 764-1-R10k | — |
| AN7 | 090046 | 10k x 7 2% NETWORK | BECKMAN | 764-1-R10K | — |
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SHEET 6 OF 16

J.W. 1164

| DESIGNATOR | DATRON PART No. | DESCRIPTION | PRINCIPAL MANUFACTURER | MANUFACTURER'S PART No. | No. USED Per Assy. |
|---|---|---|---|---|---|
| C1 | 150002 | 10µF 20% 16v DIP TANT | UNION CARBIDE | K10E16 | 14 |
| C2 | 150002 | 10µF " " " " | " " | " | — |
| C3 | 150002 | 10µF " " " " | " " | " | — |
| C4 | 150016 | 1µF " 35v " " | " " | K1R0E35 | 7 |
| C5 | 110013 | ·1µF 10% 250v POLYESTER | MULLARD | C280AE/P100k | 2 |
| C6 | 101103 | ·01µF 250v CER DISC | ERIE | 801 | 6 |
| C7 | 150006 | 4·7µF 20% 16v DIP TANT | UNION CARBIDE | K4R7E16 | 1 |
| C8 | | NOT USED | | | — |
| C9 | 150002 | 10µF 20% 16v DIP TANT | UNION CARBIDE | K10E16 | — |
| C10 | 102101 | 100pF 500v CER DISC | ERIE | 801 | 5 |
| C11 | 150002 | 10µF 20% 16v DIP TANT | UNION CARBIDE | K10E16 | — |
| C12 | 150016 | 1µF " 35v " " | " " | K1R0E35 | — |
| C13 | 150002 | 10µF " 16v " " | " " | K10E16 | — |
| C14 | 110013 | 0·1µF 10% 250v POLYESTER | MULLARD | C280AE/P100K | — |
| C15 | 150002 | 10µF 20% 16v DIP TANT | UNION CARBIDE | K1R0E16 | — |
| C16 | 102221 | 220pF 500v CER DISC | ERIE | 801 | 3 |
| C17 | 150002 | 10µF 20% 16v DIP TANT | UNION CARBIDE | K10E16 | — |
| C18 | 150002 | 10µF " " " " | " " | " | — |
| C19 | 150016 | 1µF " 35v " " | " " | K1R0E35 | — |
| C20 | 150002 | 10µF " " " " | " " | K10E16 | — |
| C21 | 102101 | 100pF 500v CER DISC | ERIE | 801 | — |
| C22 | 101103 | ·01µF 250v CER DISC | ERIE | 801 | — |
| C23 | 120016 | 2n2F 20% 100v POLYCARD | WIMA | FKC 2MIN | 1 |

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TITLE 1061 DIGITAL PCB. ASSY.

DRAWING NUMBER 400329

SHEET 7 OF 16

J.W. 1164

| DESIGNATOR | DATRON PART No. | DESCRIPTION | PRINCIPAL MANUFACTURER | MANUFACTURER'S PART No. | No. USED Per Assy. |
|---|---|---|---|---|---|
| C24 | 130016 | 130pF 2½% 25v POLYSTYRENE | SUFLEX | HSQ130/2½-7/25 | 1 |
| C25 | 102471 | 470pF 500v CER DISC | ERIE | 801 | 2. |
| C26 | 150016 | 1µF 20% 35V DIP TANT | UNION CARBIDE | KIROE35 | — |
| C27 | 150002 | 10µF " 16v " " | " " | K10E16 | — |
| C28 | 102220 | 22pF 500v CER DISC | ERIE | 801 | 3 |
| C29 | 150016 | 1µF 20% 35V DIP TANT | UNION CARBIDE | KIROE35 | — |
| C30 | 150002 | 10µF 20% 16V " " | " " | K10E16 | — |
| C31 | 110005 | ·01µF 10% 250v. POLYESTER | MULLARD | C280AE/P10K | 2 |
| C32 | 110003 | ·068µF | | | 1 |
| C33 | 150014 | ·68µF 20% 35v DIP TANT | UNION CARBIDE | KR68E35 | 1 |
| C34 | 101103 | ·01µF 250v CER DISC | ERIE | 801 | — |
| C35 | 150002 | 10µF 20% 16V DIP TANT | UNION CARBIDE | K10E16 | — |
| C36 | 101103 | ·01µF 250v CER DISC | ERIE | 801 | — |
| C37 | 102220 | 22pF 500v CER DISC | | " | — |
| C38 | 102221 | 220pF 500v " " | " | " | — |
| C39 | 101103 | ·01µF 250v " " | " | " | — |
| C40 | 110005 | 10nF 20% 250v POLYESTER | MULLARD | C280AE/P10K | — |
| C41 | 110027 | 3n3F 20% 100V POLYESTER | WIMA | FKS2MIN | 1 |
| C42 | 102471 | 470pF 500v CER DISC | ERIE | 801 | — |
| C43 | 102101 | 100pF 500v CER DISC. | " | 801 | — |
| C44 | 150002 | 10µF 20% 16v DIP TANT | UNION CARBIDE | K10E16 | — |
| C45 | 150016 | 1µF 20% 35v " " | " " | KIROE35 | — |
| C46 | 102220 | 22pF 500v CER DISC | ERIE | 801 | — |

NOTES.

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TITLE 1061 DIGITAL PCB. ASSY.

DRAWING NUMBER 400329

SHEET 8 OF 16

J.W. 1164

| DESIGNATOR | DATRON PART No. | DESCRIPTION | PRINCIPAL MANUFACTURER | MANUFACTURER'S PART No. | No. USED Per Assy. |
|---|---|---|---|---|---|
| C47 | 150004 | 100µF 20% 6V3 DIP. TANT. | UNION CARBIDE | K100E6V3 | 1 |
| C48 | | NOT USED | | | — |
| C49 | 101103 | ·01µF 250v CER. DISC | ITT | CD10 | — |
| C50 | 102101 | 100pF 500V CER. DISC | ITT | 801 | — |
| C51 | 102101 | 100pF 500v CER. DISC | ITT | 801 | — |
| C52 | | NOT USED | | | — |
| C53 | 102221 | 220pF 500v CER. DISC | ERIE | 801 | — |
| C54 | 130008 | 68pF 5% 160v POLYSTYRENE | SUFLEX | HS | 1 |
| C55 | 150016 | 1µF 20% 35v DIP. TANT | UNION CARBIDE | K10E16 | — |
| C56 | 104025 | 100nF $^{+80}_{-20}$% 50V CER DISC | SIEMENS | B37449 | 2 |
| C57 | 104025 | 100nF $^{+80}_{-20}$ / 50V CER DISC | SIEMENS | B37449 | — |

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DRAWING NUMBER 400329

SHEET 9 OF 16

J.W. 1164

| DESIGNATOR | DATRON PART No. | DESCRIPTION | PRINCIPAL MANUFACTURER | MANUFACTURER'S PART No. | No. USED Per Assy. |
|---|---|---|---|---|---|
| D1 | 200001 | 75mA 75v GP. Si. DIODE | FAIRCHILD | IN4148 | 10 |
| D2 | 200001 | 75mA 75v GP. Si. DIODE | FAIRCHILD | IN4148 | — |
| D3 | 200001 | 75mA 75v GP. Si. DIODE | FAIRCHILD | IN4148 | — |
| D4 | 200001 | 75mA 75v GP. Si. DIODE | FAIRCHILD | IN4148 | — |
| D5 | 200008 | 200mA 125v LL Si DIODE | FAIRCHILD | IN458A | 1 |
| D6 | 220010 | Si HOT CARRIER DIODE | HP | HSCH1001/IN6263 | 1 |
| D7 | 210027 | 2V7 400mW ZENER | MULLARD | BZY88C2V7 | 1 |
| D8 | 210033 | 3V3 400mW ZENER | MULLARD | BZY88C3V3 | 1 |
| D9 | 220022 | DUAL 37pF VARICAP DIODE | THOMPSON – CSF | BB204B | 2 |
| D10 | 200001 | 75mA 75v GP. Si. DIODE | FAIRCHILD | IN4148 | — |
| D11 | 200001 | 75mA 75v GP. Si. DIODE | FAIRCHILD | IN4148 | — |
| D12 | 200002 | 1A. 50v. GP. Si. DIODE | FAIRCHILD | IN4001 | 2 |
| D13 | 213006 | 5V 5W ZENER | UNITRODE | TVS505 | 1 |
| D14 | 200001 | 75mA 75v GP. Si. DIODE | FAIRCHILD | IN4148 | — |
| D15 | 200001 | 75mA 75v GP. Si. DIODE | FAIRCHILD | IN4148 | — |
| D16 | 200002 | 1A. 50v. GP. Si. DIODE | FAIRCHILD | IN4001 | — |
| D17 | 200001 | Si GP. DIODE | FAIRCHILD | IN4148 | — |
| D18 | | NOT USED | | | — |
| D19 | | NOT USED | | | — |
| D20 | 220022 | DUAL 37pF VARICAP DIODE | THOMPSON – CSF | BB204B | — |
| D21 | 200001 | 75mA 75v GP. Si. DIODE | FAIRCHILD | IN4148 | — |

NOTES.

SEE SHEET 2 FOR LATEST ISSUE

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TITLE 1061 DIGITAL PCB. ASSY.

DRAWING NUMBER 400329

SHEET 10 OF 16

J.W. 1164

| DESIGNATOR | DATRON PART No. | DESCRIPTION | PRINCIPAL MANUFACTURER | MANUFACTURER'S PART No. | No. USED Per Assy |
|---|---|---|---|---|---|
| Q1 | 240001 | Si NPN TRANSISTOR | NATIONAL | BC184 | 5 |
| Q2 | 240001 | " " " | " | " | — |
| Q3 | 240007 | " " " | " | 2N3646 | 2 |
| Q4 | | NOT USED | | | — |
| Q5 | 240006 | Si NPN TRANSISTOR | NATIONAL | 2N3904 | 2 |
| Q6 | 250004 | Si PNP " | " | 2N3906 | 3 |
| Q7 | 250004 | " " " | " | " | — |
| Q8 | 240001 | " NPN " | " | BC184 | — |
| Q9 | 240001 | " " " | " | " | — |
| Q10 | 250001 | " PNP " | " | BC214 | 1 |
| Q11 | | | | | — |
| Q12 | 250011 | " PNP " | " | BC327 | 1 |
| Q13 | 240007 | " NPN " | " | 2N3646 | — |
| Q14 | 240001 | " " " | " | BC184 | — |
| Q15 | 240006 | " " " | " | 2N3904 | — |
| Q16 | 250004 | " PNP " | " | 2N3906 | — |
| Q17 | 250008 | " " " | " | BC214KC | 1 |

NOTES.

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DRAWING NUMBER 400329

SHEET 11 OF 16

J W 1164

| DESIGNATOR | DATRON PART No. | DESCRIPTION | PRINCIPAL MANUFACTURER | MANUFACTURER'S PART No. | No. USED Per Assy. |
|---|---|---|---|---|---|
| | | | | | |
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| | | | | | |
| | | | | | |
| M1 | 280011 | DUAL D FLIP-FLOP | MOTOROLA | MC14013BCP | 2 |
| M2 | 280022 | QUAD BILATERAL SWITCH | " | MC14016BCP | 1 |
| M3 | 280024 | TRI-STATE HEX NON-INV. BUFFER | " | MC14503BCP | 7 |
| M4 | 280024 | " " " " " " | " | " | — |
| M5 | 280024 | " " " " " " | " | " | — |
| M6 | 280024 | " " " " " " | " | " | — |
| M7 | 280015 | QUAD LATCH | " | MC14076BCP | 5 |
| M8 | 280015 | " " | " | " | — |
| M9 | 280015 | " " | " | " | — |
| M10 | 280024 | TRI-STATE HEX NON-INV BUFFER | " | MC14503BCP | — |
| M11 | 280015 | QUAD LATCH | " | MC14076BCP | — |
| M12 | 280015 | " " | " | " | — |
| M13 | 280044 | BINARY UP/DOWN COUNTER | " | MC14516BCP | 4 |
| M14 | 280044 | " " " " | " | " | — |
| M15 | 290003 | TIMER - ASTABLE | SIGNETICS | NE 555V | 3 |
| M16 | 270058 | DUAL 1-of-4 DECODER | NATIONAL | 74LS155 | 1 |
| M17 | 270048 | QUAD 2 I/P NAND GATE | NATIONAL | 74LS00 | 2 |
| M18 | 290113-19 | 4k x 8 EPROM - SEE PROG. SPEC. | | TMS2532JL/PROGRAMMED | 1 |
| M19 | 280066-1 | 256X4 STATIC RAM | SEE DRAWING | | 2 |

NOTES.

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DRAWING NUMBER 400329 SHEET 12 OF 16

J.W. 1164

| DESIGNATOR | DATRON PART No. | DESCRIPTION | PRINCIPAL MANUFACTURER | MANUFACTURER'S PART No. | No. USED Per Assy. |
|---|---|---|---|---|---|
| M20 | 280066-1 | 256 x 4 STATIC RAM | SEE DRG | | — |
| M21 | 270064 | QUAD TRISTATE BUFFER | NATIONAL | DM 74LS125N | 1 |
| M22 | 280011 | DUAL D FLIP-FLOP | " | MC14013BCP | — |
| M23 | 270053-3 | A-D CHIP | FERRANTI | ULA 2035H | 1 |
| M24 | 280024 | TRI-STATE HEX NON-INV. BUFFER | MOTOROLA | MC14503BCP | — |
| M25 | 280024 | " " " " " " | " | " | — |
| M26 | 280006 | DUAL J-K FLIP-FLOP | " | MC14027BCP | 1 |
| M27 | 280004 | 14BIT BINARY COUNTER | " | MC14020BCP | 1 |
| M28 | 270051 | DUAL 4 I/P AND GATE | NATIONAL | 74LS21 | 2 |
| M29 | 270055 | DUAL 4 I/P NAND GATE | " | 74LS20 | 2 |
| M30 | 290057-19 | 4k x 8 EPROM - SEE PROG. SPEC | | TMS 2532 JL/PROGRAM'D | 1 |
| M31 | 280096 | 1K x 4BIT STATIC CMOS RAM | SEE DRAWING | | 2 |
| M32 | 270069 | BCD DECIMAL DECODER LS | NATIONAL | DM 74LS42N | 1 |
| M33 | 270051 | DUAL 4 I/P AND GATE | " | 74LS21 | — |
| M34 | 270055 | DUAL 4 I/P NAND GATE | " | 74LS20 | — |
| M35 | 290056-19 | 4k x 8 EPROM - SEE PROG. SPEC | | TMS 2532 JL/PROGRAM'D | 1 |
| M36 | 280096 | 1K x 4BIT STATIC CMOS RAM | SEE DRAWING | | — |
| M37 | 280025 | QUAD BILATERAL SWITCH | MOTOROLA | MC140668CP | 2 |
| M38 | 280071 | TRIPLE 3 I/P NOR GATE | MULLARD | HEF4025P | 2 |
| M39 | 280017 | HEX INVERTER | MOTOROLA | MC14069BCP | 1 |
| M40 | 280083 | QUAD 2 I/P NOR GATE | MULLARD | HEF4001BP | 1 |
| M41 | 280044 | BINARY UP/DOWN COUNTER | MOTOROLA | MC14516BCP | — |
| M42 | 280003 | QUAD LATCH | " | MC14042BCP | 2 |

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DRAWING NUMBER 400329 SHEET 13 OF 16

J.W. 1164

| DESIGNATOR | DATRON PART No. | DESCRIPTION | PRINCIPAL MANUFACTURER | MANUFACTURER'S PART No. | No USED Per Assy |
|---|---|---|---|---|---|
| M43 | 290003 | TIMER - ASTABLE | SIGNETICS | NE 555 | – |
| M44 | 270048 | QUAD 2 I/P NAND GATE | NATIONAL | 74LS00 | – |
| M45 | 270050 | HEX INVERTER | " | 74LS04 | – |
| M46 | 280025 | QUAD BILATERAL SWITCH | MOTOROLA | MC14066BCP | – |
| M47 | 280070 | DIVIDE-BY-8 COUNTER/DIVIDER | MULLARD | HEF 4022BP | – |
| M48 | 280071 | TRIPLE 3 I/P NOR GATE | " | HEF 4025BP | – |
| M49 | 280023 | QUAD 2 I/P NOR GATE | MOTOROLA | MC14001 BCP | – |
| M50 | 280044 | BINARY UP DOWN COUNTER | " | MC14516BCP | – |
| M51 | 280003 | QUAD LATCH | " | MC14042BCP | – |
| M52 | 270056 | 8 I/P NAND GATE | NATIONAL | 74LS30 | 1 |
| M53 | 280061 | MICRO PROCESSOR CHIP | MOTOROLA | MC6800L | 1 |
| M54 | 270023 | QUAD 2 I/P NAND GATE | NATIONAL | 7437 | 2 |
| M55 | 270054 | QUAD 2 I/P AND GATE | " | 74LS08 | – |
| M56 | 270054 | " " " " | " | " | – |
| M57 | 270057 | DUAL JK FLIP-FLOP | " | 74LS76 | 1 |
| M58 | 280009 | HEX INVERTER BUFFER | MOTOROLA | MC14049 | 2 |
| M59 | 280009 | HEX INVERTER BUFFER | MOTOROLA | MC4049 | – |
| M60, M62 | 260031 | VOLTAGE DETECTOR | INTERSIL | ICL8211 | 2 |
| M61 | 290003 | TIMER - ASTABLE | SIGNETICS | NE555V | – |
| S1 | | NOT USED | | | – |
| S2 | | NOT USED | | | – |
| S3 | | NOT USED | | | – |

NOTES

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TITLE 1061 DIGITAL PCB ASSY

DRAWING NUMBER 400329 SHEET 14 OF 16

| DESIGNATOR | DATRON PART No. | DESCRIPTION | PRINCIPAL MANUFACTURER | MANUFACTURER'S PART No. | No USED Per Assy |
|---|---|---|---|---|---|
| L1 | 370003 | 1000μH 40Ω R.F CHOKE | SIGMA | 5010 000 | 1 |
| L2 | 370002 | 100μH ·40Ω " " | TOKO | YXRS 8576 | 1 |
| | 590004 | SLEEVE – PTFE | HELLERMAN ELECTRIC | FE10 | A/R |
| TP1 - TP33, LINKS | 540002 | 22 SWG. BTC WIRE | | | A/R |
| | 920048 | BUS STRIP | MEKTRON | M823 14.7.3F | 1 |
| | 590055 | SLEEVE Ø1·0 SIL. RUBBER | HELLERMAN ELECTRIC | H15 CONT. BLACK | 10 mm |
| | 630098 | COMPONENT CLIP | RICHCO | KKU-8 | 1 |
| | 606005 | CLIP FOR 605002 | ANTIFERENCE | RC74 | 3 |
| J1, J2, J4 | 605002 | 16 WAY D.I.L. LOW PROFILE SKT. | VERMYN OR ANTIFERENCE | A23-200 V OR CN-63-S3 | 3 |
| | 605065 | 28 WAY D.I.L. " " " | AUGAT | 328-AG39D | |
| | 605060 | 14 WAY D.I.L. SOCKET | ASTRALUX OR VERMYN | ICL143-S3T | 22 |
| | 605061 | 16 WAY D.I.L. SOCKET | " " | ICL163-S6T | 29 |
| | 605050 | 40 WAY D.I.L. SOCKET | AUGAT | 340-AG39D | 1 |
| | 605063 | 22 WAY D.I.L. SOCKET | AUGAT | 322-AG39D | 2 |
| | 605064 | 24 WAY D.I.L. SOCKET | " | 324-AG39D | 3 |
| | 605062 | 18 WAY D.I.L SOCKET | " | 318-AG39D | 2 |
| JL3 | 604037 | PROGRAMMING CLASS 160 PLUG | " | 8136-4T5G-8 | 1 |
| | 605059 | 8 WAY D.I.L. SOCKET | ASTRALUX | ICL-083-S6T | 1 |
| J5 | 605052 | 8 WAY POLARISED SOCKET | " | 22-01-2085 | 1 |
| | | | | | |
| | | | | | |
| J3 | 605102 | 24 WAY D.I.L SOCKET GOLD | CA | CA-24S-10SD | 1 |
| | 410096-11B | PCB | | | 1 |

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TITLE 1061 DIGITAL PCB. ASSY.

DRAWING NUMBER 400329 SHEET 15 OF 16

| DESIGNATOR | DATRON PART No. | DESCRIPTION | PRINCIPAL MANUFACTURER | MANUFACTURER'S PART No. | No. USED Per Assy. |
|---|---|---|---|---|---|
| | 400379/1 | WIRE/TERMINAL ASSY. | | | 8 |
| J6 | | NOT USED | | | — |
| J7 | | NOT USED | | | — |
| | 620003 | SOLDER PCB TERMINAL LUG | HARWIN | H2105A | 5 |
| | 620007 | TEST POINT TERMINAL | MICROVAR | C 30 | 32 |
| | 630036 | CERAMIC BEADS 18 SWG | PARK ROYAL PORCELAIN | N° 1 | 2 |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | 920140-1 | 28 PIN DIL. HEATSINK | AAVID | 5806B | 1 |
| | | | | | |
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TITLE 1061 DIGITAL ! PCB. ASSY.

DRAWING NUMBER 400329

SHEET 16 OF 16

J.W 1164

| DESIGNATOR | DATRON PART No. | DESCRIPTION | PRINCIPAL MANUFACTURER | MANUFACTURER'S PART No. | No. USED Per Assy |
|---|---|---|---|---|---|
| R1 | 000472 | 4k7 5% ¼W CARBON | MULLARD | CR25 | 3 |
| R2 | 000103 | 10k " " " | " | " | 2 |
| R3 | 000183 | 18k " " " | " | " | 1 |
| R4 | 000103 | 10k " " " | " | " | — |
| R5 | 000104 | 100k " " " | " | " | 1 |
| R6 | | NOT USED | | | — |
| R7 | | NOT USED | | | — |
| R8 | 000102 | 1k 5% ¼W CARBON | MULLARD | CR25 | 19 |
| R9 | 000102 | 1k " " " | " | " | — |
| R10 | 000102 | 1k " " " | " | " | — |
| R11 | 000102 | 1k " " " | " | " | — |
| R12 | 000102 | 1k " " " | " | " | — |
| R13 | 000102 | 1k " " " | " | " | — |
| R14 | 000102 | 1k " " " | " | " | — |
| R15 | 000102 | 1k " " " | " | " | — |
| R16 | | NOT USED | | | — |
| R17 | | NOT USED | | | — |
| R18 | 000102 | 1k " " " | " | " | — |
| R19 | 000102 | 1k " " " | " | " | — |
| R20 | 000102 | 1k " " " | " | " | — |
| R21 | | NOT USED | | | — |
| R22 | 000272 | 2k7 5% ¼W CARBON | " | " | 5 |
| R23 | 000472 | 4k7 " " " | " | " | — |

NOTES. CIRCUIT DIAGRAM = 430330
CHECK PROCEDURE = 460330
CHECK LIST = 470330

SEE SHEET 2 FOR LATEST ISSUE

| ISS | C | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|---|---|---|---|---|---|---|---|---|---|---|
| ECO | — | — | 789 | 822 | 854 | 904 | 000026 | 1217 | 1253 | 1588 |
| DATE | 2.5.78 | 29.9.78 | 17 Nov 78 | 20 FEB 79 | 10 MAY 79 | 21.6.79 | 3-1-80 | 17-8-81 | 2-12-81 | 1-3-83 |
| CHKD | — | DBW | MSD | [illegible] | MD | MD | AP | MD | MD | MD |

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| DRAWN | T. L. |
| CHECKED | [illegible] |
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TITLE 1061 DISPLAY DRIVER PCB. ASSY

DRAWING NUMBER 400330 SHEET 2 OF 7

J.W. 1164

| DESIGNATOR | DATRON PART No. | DESCRIPTION | PRINCIPAL MANUFACTURER | MANUFACTURER'S PART No. | No. USED Per Assy |
|---|---|---|---|---|---|
| R24 | 000272 | 2k7 5% ¼W CARBON | MULLARD | CR25 | — |
| R25 | 000272 | 2k7 " " " | " | " | — |
| R26 | 000272 | 2k7 " " " | " | " | — |
| R27 | 000182 | 1k8 " " " | " | " | 1 |
| R28 | 000222 | 2k2 " " " | " | " | 1 |
| R29 | 000272 | 2k7 " " " | " | " | — |
| R30 | 000102 | 1k " " " | " | " | — |
| R31 | 000102 | 1k " " " | " | " | — |
| R32 | 000102 | 1k " " " | " | " | — |
| R33 | 000102 | 1k " " " | " | " | — |
| R34 | 000102 | 1k " " " | " | " | — |
| R35 | 000102 | 1k " " " | " | " | — |
| R36 | 000102 | 1k " " " | " | " | — |
| R37 | 000102 | 1k " " " | " | " | — |
| R38 | 000472 | 4k7 " " " | " | " | — |
| R39 | 000393 | 39k " " " | " | " | 1 |
| R40 | | NOT USED | | | — |
| R41 | 000563 | 56K 5% ¼W CARBON | MULLARD | CR25 | 1 |
| | | | | | |
| | | | | | |
| C1 | 150020 | 10µF 20% 25v DIP TANT | UNION CARBIDE | K10E25 | 3 |
| C2 | | NOT USED | | | — |
| C3 | | NOT USED | | | — |

NOTES.

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TITLE 1061 DISPLAY DRIVER PCB. ASSY.

DRAWING NUMBER 400330 SHEET 3 OF 7

J.W. 1164

| DESIGNATOR | DATRON PART No. | DESCRIPTION | PRINCIPAL MANUFACTURER | MANUFACTURER'S PART No. | No. USED Per Assy. |
|---|---|---|---|---|---|
| C4 | 110013 | 0·1μF 20% 250v POLYESTER | MULLARD | C280AE/P100K | 8 |
| C5 | 110013 | " " " " | " | " | – |
| C6 | 110013 | " " " " | " | " | – |
| C7 | 110013 | " " " " | " | " | – |
| C8 | 110013 | " " " " | " | " | – |
| C9 | 110013 | " " " " | " | " | – |
| C10 | 110013 | " " " " | " | " | – |
| C11 | 110013 | " " " " | " | " | – |
| C12 | | NOT USED | | | – |
| C13 | 110005 | 0·01μF 20% 250v " | " | C280AE/P10K | 3 |
| C14 | 150020 | 10μF 20% 25v. DIP. TANT | UNION CARBIDE | K10E25 | – |
| C15 | 110005 | 0·01μF 20% 250v POLYESTER | MULLARD | C280AE/P10K | – |
| C16 | 110005 | 0·01μF 20% 250v POLYESTER | MULLARD | C280AE/P10K | – |
| C17 | 150020 | 10μF 20% 25v DIP. TANT | UNION CARBIDE | K10E25 | – |
| C18 | 180019 | 10μf 20% 250v AL ELECT | I.T.T. | JF10-1006 250AA | 1 |
| | | | | | |
| | | | | | |
| D1 | | NOT USED | | | – |
| D2 | | NOT USED | | | – |
| D3 | | NOT USED | | | – |
| D4 | 200001 | DIODE Si GP. | FAIRCHILD | IN4148 | 8 |
| D5 | 200001 | " " " | " | " | – |
| D6 | 200001 | " " " | " | " | – |

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| DATE | DRAWING NUMBER 400330 SHEET 4 OF 7 |

J.W. 1164

| DESIGNATOR | DATRON PART No. | DESCRIPTION | PRINCIPAL MANUFACTURER | MANUFACTURER'S PART No. | No. USED Per Assy. |
|---|---|---|---|---|---|
| D7 | 200001 | DIODE Si GP. | FAIRCHILD | IN4148 | – |
| D8 | 200001 | " " " | " | " | – |
| D9 | 200001 | " " " | " | " | – |
| D10 | 200001 | " " " | " | " | – |
| D11 | 200001 | " " " | " | " | – |
| D12 | 213005 | DIODE ZENER 7.5V. ½W | MOTOROLA | BZX79C7.5 | 1. |
| | | | | | |
| Q1 | 250009 | Si PNP TRANSISTOR | NATIONAL | 2N5401 | 11 |
| Q2 | 250009 | " " " | " | " | – |
| Q3 | 250009 | " " " | " | " | – |
| Q4 | | NOT USED | | | – |
| Q5 | 240009 | Si NPN TRANSISTOR | " | MPS L01 | 8 |
| Q6 | 240009 | " " " | " | " | – |
| Q7 | 240009 | " " " | " | " | – |
| Q8 | 240009 | " " " | " | " | – |
| Q9 | 240009 | " " " | " | " | – |
| Q10 | 240009 | " " " | " | " | – |
| Q11 | 240009 | " " " | " | " | – |
| Q12 | 240009 | " " " | " | " | – |
| Q13 | 250009 | " PNP " | " | 2N5401 | – |
| Q14 | 250009 | " " " | " | " | – |
| Q15 | 250009 | " " " | " | " | – |
| Q16 | 250009 | " " " | " | " | – |

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| DATE | DRAWING NUMBER 400330 SHEET 5 OF 7 |

J.W. 1164

| DESIGNATOR | DATRON PART No. | DESCRIPTION | PRINCIPAL MANUFACTURER | MANUFACTURER'S PART No. | No. USED Per Assy |
|---|---|---|---|---|---|
| Q17 | 250009 | Si PNP TRANSISTOR | NATIONAL | 2N5401 | – |
| Q18 | 250009 | " " " | " | " | – |
| Q19 | 250009 | " " " | " | " | – |
| Q20 | 250009 | " " " | " | " | – |
| | | | | | |
| | | | | | |
| | | | | | |
| M1 | 280062 | 128 × 8 BIT STATIC RAM | MOTOROLA | MC 6810 | 1 |
| M2 | | NOT USED | | | – |
| M3 | | NOT USED | | | – |
| M4 | 280023 | QUAD 2 I/P NOR GATE | " | MC14001BCP | 2 |
| M5 | 280023 | QUAD 2 I/P NOR GATE | " | " | – |
| M6 | 280024 | TRI-STATE HEX NON-INV BUFFER | " | MC14503BCP | 2 |
| M7 | 280024 | " " " " " | " | " | – |
| M8 | 280059 | DUAL BINARY UP COUNTER | " | MC14520BCP | 1 |
| M9 | 270045 | QUAD 2-1 DATA SELECT LS TTL | NATIONAL | SN74LS157 | 1 |
| M10 | | NOT USED | | | – |
| M11 | 280043 | 4 BIT LATCH/4 TO 16 LINE DECODER | MOTOROLA | MC14515BCP | 1 |
| M12 | 270048 | QUAD 2 I/P NAND LS TTL | NATIONAL | SN74LS00 | 1 |
| M13 | 280077 | HEX GATE | MOTOROLA | MC14572 | 1 |
| | | | | | |
| | | | | | |
| AN2-AN4 | 390065 | 330K±1% 2% RESISTOR NETWORK | BECKMAN | 764-1-R330K | 3 |

NOTES.

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TITLE 1061 DISPLAY DRIVER PCB. ASSY.

DRAWING NUMBER 400330 | SHEET 6 OF 7

J.W. 1164

| DESIGNATOR | DATRON PART No. | DESCRIPTION | PRINCIPAL MANUFACTURER | MANUFACTURER'S PART No. | No. USED Per Assy. |
|---|---|---|---|---|---|
| J1 | 571095/C | 16 WAY AP/3M RIBBON CABLE | DATRON | — | 1 |
| J2 | 605102 | 24 WAY DIL. SKT. GOLD | CA | CA-24S-10SD | 1 |
| | 605060 | 14 WAY DIL SOCKET | ASTRALUX or JERMYN | ICL143-S3T | 3 |
| | 605061 | 16 WAY DIL SOCKET | " " | ICL163-S6T | 5 |
| | 605064 | 24 WAY DIL. SKT. TIN PLATE | AUGAT | 324-AG39D | 2 |
| TP1-TP6 | 540002 | 22 SWG BTC WIRE | | | A/R |
| | 590004 | SLEEVE – PTFE | HELLERMANN ELECTRIC | FE10 | A/R |
| | 410097-5B | PCB | | | 1 |
| | | | | | |
| | | | | | |
| | | | | | |
| | 620007 | TEST POINT TERMINAL | MICROVAR | C30 | 5 |
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TITLE 1061 DISPLAY DRIVER PCB. ASSY.

DRAWING NUMBER 400330 | SHEET 7 OF 7

| DESIGNATOR | DATRON PART No. | DESCRIPTION | PRINCIPAL MANUFACTURER | MANUFACTURER'S PART No. | No. USED Per Assy. |
|---|---|---|---|---|---|
| R1 | | NOT USED | | | |
| R2 | 090001 | P.T.C. THERMISTOR | MULLARD | VA8650 | 2 |
| R3 | 090044 | 4MO 1% MF | ACI | " | (1SET) R3 R4 |
| R4 | | 3K94 1% MF | ACI | | - |
| R5 | 000106 | 10M 5% 1/4W CARBON | MULLARD | CR25 | 5 |
| R6 | 000392 | 3K9 " " " | " | " | 2 |
| R7 | 000106 | 10M " " " | " | " | - |
| R8 | 019761 | 9K76 1% 50ppm M.F. | HOLCO | H8 | 1 |
| R9 | 090001 | P.T.C. THERMISTOR | MULLARD | VA8650 | - |
| R10 | | NOT USED | | | - |
| R11 | 000106 | 10M 5% 1/4W CARBON | MULLARD | CR25 | - |
| R12 | 000563 | 56K " " " | " | " | 2 |
| R13 | 000563 | 56K " " " | " | " | - |
| R14 | 000104 | 100K " " " | " | " | 6 |
| R15 | 000243 | 24K " " " | " | " | 1 |
| R16 | 000682 | 6K8 " " " | " | " | 1 |
| R17 | 000103 | 10K " " " | " | " | 3 |
| R18 | 000107 | 100M " " " | " | " | 1 |
| R19 | 000104 | 100K " " " | " | " | - |
| R20 | 041505 | 15M 1% 100ppm CF | ALLEN BRADLEY | CC | 2 |
| R21 | 041505 | 15M " " " | " | " | - |
| R22 | 000222 | 2K2 5% 1/4W CARBON | MULLARD | CR25 | 2 |
| R23 | 000391 | 390R " " " | " | " | 1 |

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| | 1217 | 1300 | 1667 | | | | | | | | |
| | 18.8.81 | 30-3-82 | 7-8-84 | | | | | | | | |
| | MD | MSD | MD | | | | | | | | |

| ISS. | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
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| E.C.O. | RELEASED | ECO840 | ECO857 | 885/909 | 933,930 | 1007 1017 | 1021 1020 | 1025 1027 | 1109 | 1115,1124 | 1134 | 1176 |
| DATE | 5-12-78 | 27-2-79 | 4.5.79 | 20-6-79 | 13-7-79 | 25-10-79 | 3-1-80 | 6-FEB-80 | 18.4.80 | 3.6.80 | 20.6.80 | 12.12.80 |
| CHKD. | | MD | MD | MD | MD | MD | MD | MD | MD | MD | MD | MD |

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TITLE 10Ω1 OHMS P.C.B ASSY.

DRAWING NUMBER 400331 SHEET 2 OF 12

| DESIGNATOR | DATRON PART No. | DESCRIPTION | PRINCIPAL MANUFACTURER | MANUFACTURER'S PART No. | No. USED Per Assy. |
|---|---|---|---|---|---|
| R24 | 070093 | 57K77 0·1% WIREWOUND. | MANN | | 1 |
| R25 | 070094 | 577K7 0·1% WIREWOUND. | MANN | | 1 |
| R26 | 063204 | 200k POT CERMET | BECKMANN | 72P | 2 |
| R27 | 063204 | 200K " " | " | " | - |
| R28 | 000105 | 1M 5% 1/4W CARBON | MULLARD | CR25 | 4 |
| R29 | 070092 | 5K777 0·1% WIREWOUND | MANN | | 1 |
| R30 | 070091 | 1K2839 0·1% WIREWOUND | MANN | | 2 |
| R31 | 070091 | 1K2839 0·1% " | " | | - |
| R32 | 000332 | 3K3 5% 1/4W CARBON | MULLARD | CR25 | 1 |
| R33 | 000154 | 150K 5% 1/4W CARBON | MULLARD | CR25. | 1 |
| R34 | 000561 | 560R " " " | " | " | 1 |
| R35 | 000106 | 10M 5% 1/4W CARBON | MULLARD | CR25 | - |
| R36 | 041005 | 10M 1% 100ppm CF | ALLEN BRADLEY | CC | 1 |
| R37 | 090049 | 18M MATCHED PAIR | HOLCO | | 1 PAIR |
| R38 | | 18M | | | - |
| R39 | | F.S.V | | | - |
| R40 | | F.S.V. | | | - |
| R41 | 000473 | 47K 5% 1/4W CARBON | MULLARD | CR25 | 3 |
| R42 | 000624 | 620K " " " | " | " | 1 |
| R43 | 000473 | 47K " " " | " | " | - |
| R44 | 000102 | 1K " " " | " | " | 2 |
| R45 | 000102 | 1K " " " | " | " | - |
| R46 | 000562 | 5K6 " " " | " | " | 2 |

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DRAWING NUMBER 400331 SHEET 3 OF 12

| DESIGNATOR | DATRON PART No. | DESCRIPTION | PRINCIPAL MANUFACTURER | MANUFACTURER'S PART No. | No. USED Per Assy. |
|---|---|---|---|---|---|
| R47 | 000473 | 47K 5% 1/4W CARBON | MULLARD | CR25 | – |
| R48 | 000433 | 43K " " " | " | " | 1 |
| R49 | 000392 | 3K9 " " " | " | " | – |
| R50 | 000562 | 5K6 " " " | " | " | – |
| R51 | 000105 | 1M " " " | " | " | – |
| R52 | 000104 | 100K " " " | " | " | – |
| R53 | 000273 | 27K " " " | " | " | 2 |
| R54 | 000104 | 100K " " " | " | " | – |
| R55 | 000105 | 1M " " " | " | " | – |
| R56 | 000824 | 820K " " " | " | " | 1 |
| R57 | 000104 | 100K " " " | " | " | – |
| R58 | 000273 | 27K " " " | " | " | – |
| R59 | 000104 | 100K " " " | " | " | – |
| R60 | 000123 | 12K " " " | " | " | 1 |
| R61 | 000334 | 330K " " " | " | " | 1 |
| R62 | 000222 | 2K2 " " " | " | " | – |
| R63 | 000223 | 22K " " " | " | " | 1 |
| R64 | 000333 | 33K " " " | " | " | 2 |
| R65 | 000821 | 820R " " " | " | " | 1 |
| R66 | 000105 | 1M " " " | " | " | – |
| R67 | 000474 | 470K " " " | " | " | 1 |
| R68 | 000124 | 120K " " " | " | " | 1 |
| R69 | 000103 | 10K " " " | " | " | – |

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SHEET 4 OF 12

| DESIGNATOR | DATRON PART No. | DESCRIPTION | PRINCIPAL MANUFACTURER | MANUFACTURER'S PART No. | No. USED Per Assy. |
|---|---|---|---|---|---|
| R70 | 000221 | 220R 5% 1/4W CARBON | MULLARD | CR25 | 1 |
| R71 | 000103 | 10k 5% 1/4W CARBON | MULLARD | CR25 | – |
| R72 | 000333 | 33k 5% 1/4W CARBON | MULLARD | CR25 | – |
| R73 | 000823 | 82k 5% 1/4W CARBON | MULLARD | CR25 | 1 |
| R74 | 000106 | 10M 5% 1/4W CARBON | MULLARD | CR25 | – |
| | | | | | |
| AN1 | 090017 | 100k x 7 2% NETWORK | BECKMAN | 764-1-R100k | 1 |

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DRAWING NUMBER 400331

SHEET 5 OF 12

| DESIGNATOR | DATRON PART No. | DESCRIPTION | PRINCIPAL MANUFACTURER | MANUFACTURER'S PART No. | No. USED Per Assy |
|---|---|---|---|---|---|
| C1 | 120028 | 4700pF 20% 100V POLYCARB | WIMA | FKC-2 MIN | 1 |
| C2 | 120026 | 680pF 20% 100V POLYCARB | WIMA | FKC-2 MIN | 1 |
| C3 | 102470 | 47pF 500V CER DISC | ERIE | 801 | 2 |
| C4 | 102470 | 47pF 500V CER DISC | ERIE | 801 | – |
| C5 | 102222 | 2n2F 500V CER DISC | ERIE | 801 | 1 |
| C6 | 101103 | ·01μF 250V CER DISC | ERIE | 801 | 4 |
| C7 | 120022 | 1nSF 20% 100V POLYCARB | WIMA | FKC2 MIN | 1 |
| C8 | 120014 | 2·2μF 10% 63V POLYCARB | ASHCROFT | A2B2Z2Z1B. | 2 |
| C9 | 120014 | 2·2μF " " " | " | " | – |
| C10 | 110013 | 0·1μF 10% 250V POLYESTER | MULLARD | C280AE/P100K. | 2 |
| C11 | 150001 | 22μF 20% 16V DIP TANT | UNION CARBIDE | K22E16 | 2 |
| C12 | 101103 | ·01μF 250V CER DISC | ERIE | 801 | – |
| C13 | 150001 | 22μF 20% 16V DIP TANT | UNION CARBIDE | K22E16 | – |
| C14 | 101103 | ·01μF 250V CER DISC | ERIE | 801 | – |
| C15 | 102100 | 10pF 500V CER DISC | " | " | 2 |
| C16 | 102100 | 10pF " " " | " | " | – |
| C17 | 102102 | 1nF " " " | " | " | 1 |
| C18 | 120021 | 0·47μF 10% 63V POLYCARB | ASHCROFT | A2B4711B | 1 |
| C19 | 150014 | 680nF 20% 35V DIP TANT | UNION CARBIDE | KR68E35 | 1 |
| C20 | 150016 | 1μF 20% 35V DIP TANT | UNION CARBIDE | K1R0E35. | 1 |
| C21 | 150020 | 10μF 20% 25V DIP TANT | UNION CARBIDE | K10E25. | 2 |
| C22 | 101103 | ·01μF 250V CER DISC | ERIE | 801 | – |
| C23 | 150020 | 10μF 20% 25V DIP TANT | UNION CARBIDE | K10E25. | – |

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DRAWING NUMBER 400331

SHEET 6 OF 12

IW 1164

| DESIGNATOR | DATRON PART No. | DESCRIPTION | PRINCIPAL MANUFACTURER | MANUFACTURER'S PART No. | No. USED Per Assy. |
|---|---|---|---|---|---|
| C24 | 102101 | 100pf 10% 500V Cer Disc | I.T.T | CD10 | 3 |
| C25 | 102101 | 100pf " " " " | " | " | – |
| C26 | 102101. | 100pF " " " " | " | " | – |
| C27 | 110013 | 100nF 20% 250v POLYESTER | MULLARD | C280AE/P100K | – |
| C28 | 104025 | 100nF +80% -20% 50V CER DISC | SIEMENS | B37449. | 1 |
| | | | | | |
| D1 | 213001 | 10V 5W ZENER | MOTOROLA | 1N5347 | 4 |
| D2 | 213001 | 10V " " | " | " | – |
| D3 | | NOT USED | | | |
| D4 | | NOT USED | | | |
| D5 | | NOT USED | | | |
| D6 | | NOT USED | | | |
| D7 | 210027 | 2V7 400mW ZENER | MULLARD | BZY88C2V7 | 1 |
| D8 | 200001 | Si G.P. | FAIRCHILD | 1N4148 | 11 |
| D9 | | NOT USED | | | |
| D10 | 213001 | 10V 5W ZENER | MOTOROLA | 1N5347 | – |
| D11 | 213001 | 10V " " | " | " | – |
| D12 | 200001 | Si G.P. | FAIRCHILD | 1N4148 | – |
| D13 | | NOT USED | | | |
| D14 | 200008 | Si LOW LEAKAGE | FAIRCHILD | 1N458A | 3 |
| D15 | 200008 | Si " " | " | " | – |
| D16 | 210075 | 7V5 400mW ZENER | MULLARD | BZY88C7V5 | 1 |
| D17 | 210120 | 12V 400mW ZENER | " | BZY88C12 | 1 |

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DRAWING NUMBER 400331

SHEET 7 OF 12

IW 1164

| DESIGNATOR | DATRON PART No. | DESCRIPTION | PRINCIPAL MANUFACTURER | MANUFACTURER'S PART No. | No. USED Per Assy. |
|---|---|---|---|---|---|
| D18 | 200001 | Si G.P. | FAIRCHILD | IN4148 | – |
| D19 | 200001 | Si " | " | " | – |
| D20 | 200001 | Si " | " | " | – |
| D21 | 200001 | Si " | " | " | – |
| D22 | 200001 | Si " | " | " | – |
| D23 | 200001 | Si " | " | " | – |
| D24 | | NOT USED | | | |
| D25 | 200001 | Si " | " | " | – |
| D26 | 200001 | Si " | " | " | – |
| D27 | 200001 | Si GP. | " | " | – |
| D28 | 200008 | Si. Low Leakage | " | IN458A | – |
| | | | | | |
| Q1 | 230027 | N-CHAN J FET SELECTED | TELEDYNE | U3114E. | 7 |
| Q2 | 230027 | " " " | " | " | – |
| Q3 | 230027 | " " " | " | " | – |
| Q4 | 230027 | " " " | " | " | – |
| Q5 | 230002 | N-CHAN J FET | SILICONIX | U1994E | 6 |
| Q6 | 230027 | N-CHAN J FET SELECTED | TELEDYNE | U3114E | – |
| Q7 | 230027 | " " " | " | " | – |
| Q8 | 230002 | N-CHAN J FET. | SILICONIX | U1994E. | – |
| Q9 | 230002 | " " | " | " | – |
| Q10 | 240017 | Si NPN SUPERMATCH PAIR | NATIONAL | LM394 | 1 |
| Q11 | 230029 | N-CHAN J FET | SILICONIX | J309 | 4 |

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| DATE | DRAWING NUMBER 400331 — SHEET 8 OF 12 |

| DESIGNATOR | DATRON PART No. | DESCRIPTION | PRINCIPAL MANUFACTURER | MANUFACTURER'S PART No. | No. USED Per Assy. |
|---|---|---|---|---|---|
| Q12 | | NOT USED | | | |
| Q13 | 240012 | Si NPN | NATIONAL | 2N3053 | 1 |
| Q14 | 230027 | N-CHAN J FET | TELEDYNE | U3114E | – |
| Q15 | 250001 | Si PNP | NATIONAL | BC214 | 2 |
| Q16 | 250011 | Si PNP | NATIONAL | BC327 | 1 |
| Q17 | 240001 | Si NPN | NATIONAL | BC184 | 2 |
| Q18 | 240001 | Si NPN | NATIONAL | BC184 | – |
| Q19 | 250001 | Si PNP | NATIONAL | BC214 | – |
| Q20 | 230002 | N-CHAN J FET | SILICONIX | U1994E | – |
| Q21 | 230029 | N-CHAN J FET. | SILICONIX | J309 | – |
| Q22 | 230029 | N-CHAN J FET. | SILICONIX | J309 | – |
| Q23 | 230002 | " " | " | U1994E | – |
| Q24 | 230002 | " " | " | " | – |
| Q25 | 230029. | " " | " | J309 | – |

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| DATE | DRAWING NUMBER 400331 — SHEET 9 OF 12 |

| DESIGNATOR | DATRON PART No. | DESCRIPTION | PRINCIPAL MANUFACTURER | MANUFACTURER'S PART No | No. USED Per Assy |
|---|---|---|---|---|---|
| M1 | 280022 | QUAD BILATERIAL SWITCH | MOTOROLA | MC 14016 BCP | 2 |
| M2 | 280022 | " " " | " | " | — |
| M3 | 260069 | 411 OP. AMP | NATIONAL | LF411CH | 1 |
| M4 | 260026 | OP AMP | NATIONAL | LM212 | 1 |
| M5 | 280025 | QUAD ANALOGUE SWITCH | MOTOROLA | MC 14066 BCP | 1 |
| M6 | 280072 | M'STABLE/ASTABLE M'VIBR | R.C.A. | CD 4047 AE | 1 |
| M7 | 280015 | QUAD LATCH | MOTOROLA | MC 14076 BCP | 2 |
| M8 | 280015 | " " | " | " | — |
| M9 | 280011 | DUAL D FLIP FLOP | MOTOROLA | MC 14013 BCP | 1 |

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TITLE 1061 OHMS PCB ASSY

DRAWING NUMBER 400331

SHEET 10 OF 12

JW. 1164

| DESIGNATOR | DATRON PART No. | DESCRIPTION | PRINCIPAL MANUFACTURER | MANUFACTURER'S PART No. | No. USED Per Assy. |
|---|---|---|---|---|---|
| RL1 | 330019 | RELAY 4P 2W 7v HOLD-IN | P&B | SEE DRAWING | 1 |
| | 400379/2 | WIRE / TERMINAL ASSY | | | 6 |
| | 410099-6 | OHMS P.C.B. | | | 1 |
| | 459112 | RELAY BRACKET. | KDP | | 1 |
| | 512999 | 7/0·2 PTFE INSULATED WHITE. | | TYPE C | 280mm. |
| | 540002 | 22 SWG TINNED COPPER WIRE. | | | A/R |
| | 590001 | SLEEVE MAX CABLE Ø 3·0 | HELLERMANN ELECTRIC | H15x20mm BLK HELSYN | 9 |
| | 590055 | SLEEVE Ø 1·0 SIL. RUBBER | HELLERMANN ELECTRIC | H15 CONT. BLACK | 20mm |
| | 590004 | PTFE SLEEVE | | | A/R. |
| | 602001 | F.S.V. TERMINAL | MOLEX | 02-04-1875 | 4 |
| | 571095/C | 16 WAY AP/3M RIBBON CABLE | DATRON | | 1 |
| | 605060 | 14 WAY DIL SOCKET | ASTRALUX | ICL-143-S3T. | 5 |
| | 605061 | 16 WAY DIL SOCKET | ASTRALUX | ICL-163-S6T. | 2 |
| J1 | 605053 | 12 WAY POLARISED SOCKET | MOLEX | 22-01-2125 | 1 |

NOTES.

J1

SEE SHEET 2 FOR LATEST ISSUE

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DATE 10-10-78

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APPROVED

DATE

datron ELECTRONICS LTD

TITLE 1061 OHMS PCB ASSY.

DRAWING NUMBER 400331

SHEET 11 OF 12

| DESIGNATOR | DATRON PART No | DESCRIPTION | PRINCIPAL MANUFACTURER | MANUFACTURER'S PART No | No. USED Per Assy |
|---|---|---|---|---|---|
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | 611004 | SCREW M3 x 6mm STEEL POZIPAN ZINC PLATED . GKN. | | | 1 |
| | 613005 | WASHER M3 INT/SHAKEPROOF | GKN DISTRIBUTORS | ZINC PLATED | 2 |
| | | | | | |
| | 615002 | NUT M3 FULL HEX STEEL | | ZINC PLATED | 1 |
| | 615005 | NUT 3-48 UNC FULL HEX | STEEL | " " | 1 |
| | | | | | |
| | 617010 | NYLATCH PLUNGER HN3P | ORDER FROM C.J. FOX & SONS. | HN3P-32-4-1 | 4 |
| | 617011 | NYLATCH GROMMET HN3G | | HN3G-32-1 | 4 |
| | 618002 | TO5 MOUNTING PAD | JERMYN | TO5I8-0040 | 1 |
| | 620003 | SOLDER PCB TERMINAL LUG | HARWIN | H2105A | 8 |
| | 630024 | STANDARD STEATITE INSUL BEAD | PARK ROYAL PORCELAIN Co | TYPE No 2 (16 SWG) | 8 |
| | 620007 | TEST TERMINAL | MICROVAR | C30 | 11 |
| | | | | | |
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| DATE 10-10-78 | datron ELECTRONICS LTD |
| DRAWN B.J. | TITLE 1061 OHMS PCB ASSY |
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| DATE | DRAWING NUMBER 400331 — SHEET 12 OF 12 |

| DESIGNATOR | DATRON PART No. | DESCRIPTION | PRINCIPAL MANUFACTURER | MANUFACTURER'S PART No | No. USED Per Assy. |
|---|---|---|---|---|---|
| R1 | 000103 | 10k 5% ¼W CARBON | MULLARD | CR25 | 1 |
| R2 | 000104 | 100k 5% ¼W CARBON | MULLARD | CR25 | 4 |
| R3 | 000104 | 100k 5% ¼W CARBON | MULLARD | CR25 | – |
| R4 | 000104 | 100k 5% ¼W CARBON | MULLARD | CR25 | – |
| R5 | 000104 | 100k 5% ¼W CARBON | MULLARD | CR25 | – |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| AN1 | 090017 | 100k x 7 2% NETWORK | BECKMAN | 764-1-R100k | 2 |
| AN2 | 090017 | 100k x 7 2% NETWORK | BECKMAN | 764-1-R100k | – |
| | | | | | |
| | | | | | |
| C1 | 150002 | 10μF 20% 16 V DIP. TANT. | UNION CARBIDE | K10E16 | 1 |
| C2 | 150005 | 2μ2F 20% 16V DIP. TANT. | UNION CARBIDE | K2R2E16 | 1 |
| C3 | 150008 | 470nF 20% 35V DIP. TANT. | UNION CARBIDE | KR47E35 | 1 |
| C4 | 110005 | 10nF 20% 250v POLYESTER | MULLARD | C280AE P10K | 1 |
| C5 | 150016 | 1μF 20% 35V DIP. TANT. | UNION CARBIDE | K1R0E35 | 5 |
| C6 | 150016 | 1μF 20% 35V DIP. TANT. | UNION CARBIDE | K1R0E35 | – |
| C7 | 150016 | 1μF 20% 35V DIP. TANT. | UNION CARBIDE | K1R0E35 | – |
| C8 | 150016 | 1μF 20% 35V DIP. TANT. | UNION CARBIDE | K1R0E35 | – |
| C9 | 150016 | 1μF 20% 35V DIP. TANT. | UNION CARBIDE | K1R0E35 | – |

NOTES.

SEE SHEET 2 FOR LATEST ISSUE

| ISS | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 |
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| ECO | RELEASED | 1078 | 1093 | 1137 | 1165 | 1198 | 1217 | 1246 | 1253 | 1403 | 1592 |
| DATE | 1.2.80 | 22.2.80 | 26.3.80 | 28.7.80 | 16.12.80 | 25.2.81 | 18.8.81 | 4.11.81 | 3.12.81 | 24.11.82 | 2.5.84 |
| CHKD | MD | A.J. | A.J. | MD | MD | MD | MD | MD | MD | MD | MD |

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| DATE | 1.2.80 |
| DRAWN | IL |
| CHECKED | MD |
| APPROVED | |
| DATE | |

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TITLE 1061 BCD/PROG. PCB. ASSY.

DRAWING NUMBER 400332 SHEET 2 OF 4

| DESIGNATOR | DATRON PART No. | DESCRIPTION | PRINCIPAL MANUFACTURER | MANUFACTURER'S PART No. | No. USED Per Assy |
|---|---|---|---|---|---|
| D1 | 200001 | 75mA 75V GP. Si. DIODE | FAIRCHILD | IN4148 | 1 |
| | | | | | |
| M1 | 280081 | PERIPHERAL INTERFACE ADAPTOR | MOTOROLA | MC6821P | 1 |
| M2 | 290003 | 555 TIMER | FAIRCHILD | μA555TC | 1 |
| M3 | 270050 | HEX INVERTOR LS | NATIONAL | DM74LS04N | 2 |
| M4 | 270048 | QUAD 2 I/P NAND LS | NATIONAL | DM74LS00N | 1 |
| M5 | 270051 | DUAL 4 I/P AND LS | NATIONAL | DM74LS21N | 1 |
| M6 | 270050 | HEX INVERTOR LS | NATIONAL | DM74LS04N | – |
| M7 | 280015 | QUAD D-TYPE LATCH | MOTOROLA | MC14076BCP | 9 |
| M8 | 280015 | QUAD D-TYPE LATCH | MOTOROLA | MC14076BCP | – |
| M9 | 280015 | QUAD D-TYPE LATCH | MOTOROLA | MC14076BCP | – |
| M10 | 280015 | QUAD D-TYPE LATCH | MOTOROLA | MC14076BCP | – |
| M11 | 290080-19 | 2716 EPROM PROGRAMMED | DATRON | IB2716(290080-ISS) | 1 |
| M12 | 280015 | QUAD D-TYPE LATCH | MOTOROLA | MC14076BCP | – |
| M13 | 280015 | QUAD D-TYPE LATCH | MOTOROLA | MC14076BCP | – |
| M14 | 280015 | QUAD D-TYPE LATCH | MOTOROLA | MC14076BCP | – |
| M15 | 280015 | QUAD D-TYPE LATCH | MOTOROLA | MC14076BCP | – |
| M16 | 280015 | QUAD D-TYPE LATCH | MOTOROLA | MC14076BCP | – |
| M17 | 280024 | TRI-STATE HEX. BUFFER | MOTOROLA | MC14503BCP | 9 |
| M18 | 280024 | TRI-STATE HEX. BUFFER | MOTOROLA | MC14503BCP | – |
| M19 | 280024 | TRI-STATE HEX. BUFFER | MOTOROLA | MC14503BCP | – |
| M20 | 280024 | TRI-STATE HEX. BUFFER | MOTOROLA | MC14503BCP | – |
| M21 | 280024 | TRI-STATE HEX. BUFFER | MOTOROLA | MC14503BCP | – |

NOTES.

SEE SHEET 2 FOR LATEST ISSUE

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TITLE 1061 BCD/PROG. PCB. ASSY.

DRAWING NUMBER 400332 SHEET 3 OF 4

| DESIGNATOR | DATRON PART No. | DESCRIPTION | PRINCIPAL MANUFACTURER | MANUFACTURER'S PART No. | No. USED Per Assy. |
|---|---|---|---|---|---|
| M22 | 280066 | 256 x 4 BIT STATIC CMOS RAM | SEE DRAWING | | 2 |
| M23 | 280066 | 256 x 4 BIT STATIC CMOS RAM | SEE DRAWING | | - |
| M24 | 280024 | TRI-STATE HEX. BUFFER | MOTOROLA | MC14503 BCP | - |
| M25 | 280024 | TRI-STATE HEX. BUFFER | MOTOROLA | MC14503 BCP | - |
| M26 | 280024 | TRI-STATE HEX. BUFFER | MOTOROLA | MC14503 BCP | - |
| M27 | 280024 | TRI-STATE HEX. BUFFER | MOTOROLA | MC14503 BCP | - |
| | G20007 | TEST POINT TERMINAL | MICROVAR | C30 | 9 |
| J3 | 605051 | 4 WAY POLARISED SOCKET | MOLEX | (22-01-2045) 6471-4-1 | 1 |
| J1, J2 | 605102 | 24 WAY DIL. SOCKET GOLD | CA | CA 24S 10SD | 2 |
| | 605064 | 24 WAY DIL. SOCKET | AUGAT | 324-AG39D | 1 |
| | 605060 | 14 WAY DIL. SOCKET | ASTRALUX OR JERMYN | ICL143 S3T | 4 |
| | 605061 | 16 WAY DIL. SOCKET | ASTRALUX OR JERMYN | ICL163-S6T | 18 |
| J5 | 573120/C | 24 WAY AP/3M RIBBON CABLE | DATRON | | 1 |
| | 605050 | 40 WAY DIL. SOCKET | AUGAT | 340-AG39D | 1 |
| | 605059 | 8 WAY DIL. SOCKET | ASTRALUX | ICL-083-S6T | 1 |
| | 605063 | 22 WAY DIL. SOCKET | AUGAT | 322-AG39D | 2 |
| J4 | 605002 | 16 WAY DIL. SOCKET | ASTRALUX | ICN-163-S3G | 1 |
| | 606005 | SOCKET CLIP | ASTRALUX | RC-74 | 1 |
| | | | | | |
| | | | | | |
| | 605056 | CRIMP TERMINAL | MOLEX | 4809-TL | 1 |
| | 400379/1 | WIRE/TERMINAL ASSY | | | 3 |
| | 410100-4A | PCB | | | 1 |

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TITLE 1061 BCD/PROG. PCB. ASSY.

DRAWING NUMBER 400332

SHEET 4 OF 4

| DESIGNATOR | DATRON PART No | DESCRIPTION | PRINCIPAL MANUFACTURER | MANUFACTURER'S PART No. | No. USED Per Assy |
|---|---|---|---|---|---|
| R1 | 000123 | 12K 5% ¼W CARBON. | MULLARD | CR25 | 2 |
| R2 | | NOT USED | | | — |
| R3 | 000332 | 3K3 5% ¼W CARBON. | MULLARD | CR25 | 2 |
| R4 | | NOT USED | | | — |
| R5 | 000123 | 12K 5% ¼W. CARBON. | MULLARD | CR25 | — |
| R6 | 000222 | 2K2 5% ¼W CARBON. | MULLARD | CR25 | 2 |
| R7 | | NOT USED | | | — |
| R8 | | NOT USED | | | — |
| R9 | | NOT USED. | | | — |
| R10 | 000562 | 5K6 5% ¼W CARBON | MULLARD | CR25 | 1 |
| R11 | 000103 | 10K 5% ¼W CARBON | MULLARD | CR25 | 4 |
| R12 | 000105 | 1M 5% ¼W CARBON. | MULLARD | CR25 | 1 |
| R13 | | NOT USED | | | — |
| R14 | 000103 | 10k 5% ¼W CARBON | MULLARD | CR25 | — |
| R15 | | NOT USED | | | — |
| R16 | 000222 | 2k2 5% ¼W CARBON | MULLARD | CR25 | — |
| R17 | | NOT USED | | | — |
| R18 | 000681 | 680R 5% ¼W CARBON | MULLARD | CR25 | 1 |
| R19 | 000332 | 3k3 5% ¼W CARBON | MULLARD | CR25 | — |
| R20 | 000103 | 10k 5% ¼W CARBON | MULLARD | CR25 | — |
| R21 | 000103 | 10K 5% ¼W CARBON | MULLARD | CR25 | — |

NOTES

SEE SHEET 1 FOR LATEST ISSUE

| | A | 1 | 2 C | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
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| ECO | | Rel To Prod | 312/335 | 381 | 1054 | 1085 | 1167 | 1199 | 1328 | 1664 |
| DATE | 9 MAY 79 | 17 MAY 79 | 25 OCT 79 | 6 NOV 79 | 2 JAN 80 | 22.4.80 | 23.9.80 | 24.2.81 | 12.5.82 | 21.5.85 |
| | | MD | MD | MD | MD | MD | MD | MD | MD | MD |

DATE 9 MAY 79
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CHECKED MD
APPROVED
DATE 17 MAY 79

datron ELECTRONICS LTD

TITLE REAR INPUT ASSY. 1061/71

DRAWING NUMBER 400386

SHEET 2 OF 7

| DESIGNATOR | DATRON PART No. | DESCRIPTION | PRINCIPAL MANUFACTURER | MANUFACTURER'S PART No. | No. USED Per Assy |
|---|---|---|---|---|---|
| C1 | 150022 | 2µ2F. 20% 35v. DIP. TANT. | UNION CARBIDE | K2R2E35 | 1 |
| C2 | | NOT USED | | | — |
| C3 | | NOT USED | | | — |
| C4 | 150020 | 10µF 20% 25V. DIP. TANT. | UNION CARBIDE | K10E25 | 1 |
| C5 | 102101 | 100pF 10% 500v. CER. DISC | ITT | CD10 | 1 |
| C6 | 110013 | 100nF 20% 250v. POLYESTER | MULLARD | C280AEP100K | 1 |
| C7 | 150014 | 680nF 20% 35v DIP TANT | UNION CARBIDE | KR68E35 | 1 |

NOTE

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TITLE REAR INPUT ASSY 1061/1071

DRAWING NUMBER 400386

SHEET 3 OF 7

| DESIGNATOR | DATRON PART No. | DESCRIPTION | PRINCIPAL MANUFACTURER | MANUFACTURER'S PART No. | No. USED Per Assy. |
|---|---|---|---|---|---|
| D1 | 200001 | 75mA. 75V GP Si DIODE | FAIRCHILD | IN4148 | 5 |
| D2 | | NOT USED | | | – |
| D3 | 200001 | 75mA. 75V GP Si DIODE | FAIRCHILD | IN4148 | – |
| D4 | | NOT USED | | | – |
| D5 | 200001 | 75mA. 75V GP Si DIODE | FAIRCHILD | IN4148 | – |
| D6 | 200001 | 75mA 75V GP Si DIODE | FAIRCHILD | IN4148 | – |
| D7 | 200001 | 75mA 75V GP Si DIODE | FAIRCHILD | IN4148 | – |
| Q1 | 240001 | Si NPN TRANSISTOR | NATIONAL | BC184/TO18 | 2 |
| Q2 | | NOT USED | | | – |
| Q3 | 250001 | Si PNP TRANSISTOR | NATIONAL | BC214/TO18 | 1 |
| Q4 | | NOT USED. | | | – |
| Q5 | | NOT USED | | | – |
| Q6 | 240001 | Si NPN TRANSISTOR | NATIONAL | BC184/TO18 | – |
| M1 | 290132-1 | DUAL D FLIP-FLOP HYBRID | | SEE DRG | 1 |
| J1 | 604036 | CON. PIN STRIP DF 10 HORIZ TYPE | AMP | 163740-8 | 2 |
| J2, J3 | 605052 | 8WAY POLARISED SOCKET | MOLEX | (22-01-2085) 6471-8-1 | 2 |

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| DATE 9 MAY 79 | datron ELECTRONICS LTD |
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| APPROVED | |
| DATE 17 MAY 79 | DRAWING NUMBER 400386 SHEET 4 OF 7 |

| DESIGNATOR | DATRON PART No. | DESCRIPTION | PRINCIPAL MANUFACTURER | MANUFACTURER'S PART No. | No. USED Per Assy |
|---|---|---|---|---|---|
| J4 & J6 | 604033 | FLAT WAFER PIN (4 WAY GOLD) | MOLEX | 22-27-2041/GOLD | 3 |
| J5 | 605051 | 4WAY POLARISED SOCKET | MOLEX | 22-01-2045 | 1 |
| | 400379/4-3 | WIRE/TERMINAL ASSY | HOLDEN CORDS | | 6 |
| | 400379/5-3 | WIRE/TERMINAL ASSY | HOLDEN CORDS | | 4. |
| RL1 | 330018 | RELAY 2P2W 7v HOLD-IN | P&B | SEE DRAWING | 1 |
| RL2 | 330019 | RELAY 4P2W 7v HOLD-IN | P&B | SEE DRAWING | 1 |
| RL3 & RL4 | | NOT USED. | | | |
| | 410106-5 | COMPONENT P.C.B | | | 1 |
| | 410132-4 | RELAY P.C.B. | | | 1 |
| | 450257-1 | SOCKET PLATE | | | 1 |
| | 450241-1 | RELAY BRACKET | | | 1 |
| | 540002 | 22SWG TINNED COPPER WIRE | | | A/R |
| | 512999 | 7/·2 PTFE INS. WHITE WIRE | | | 140mm |

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| DATE 17 MAY 79 | DRAWING NUMBER 400386 SHEET 5 OF 7 |

| DESIGNATOR | DATRON PART No. | DESCRIPTION | PRINCIPAL MANUFACTURER | MANUFACTURER'S PART No. | No. USED Per Assy |
|---|---|---|---|---|---|
| | 590001 | SLEEVE. MAX CABLE Ø 3.0mm | HELLERMAN ELECTRIC | HIB×20MM BLK HELSYN | 17 |
| | 590004 | SLEEVE — PTFE | HELLERMAN ELECTRIC | FE10 | 30mm. |
| | | | | | |
| | | | | | |
| | | | | | |
| J11 | 604008 | 7 WAY PLUG PANEL MTG | PYE CONNECTORS | M7P | 1 |
| | | | | | |
| | 605009 | 7 WAY SOCKET | PYE CONNECTORS | M7S | 1 |
| | 605057 | CRIMP TERMINAL | MOLEX | 4809-GL | 2 |
| | 606001 | LOCKING HOOD | PYE CONNECTORS | MHN | 1 |
| | 606002 | NUT | PYE CONNECTORS | MN | 1 |
| | 606003 | WASHER | PYE CONNECTORS | MLW | 1 |
| | | | | | |
| | 605060 | 14 WAY DIL SOCKET | ASTRALUX OR JERMYN | ICN-246-54T OR A23-2023Y | 1 |
| | | | | | |
| | 611004 | SCREW M3×6mm STEEL POZI-PAN | G.K.N | ZINC PLATED | 7. |
| | 611007 | SCREW M3×6mm STEEL POZI-CSK. | G.K.N | ZINC PLATED | 7. |
| | 611016 | SCREW M3×8mm STEEL POZI-PAN | G.K.N. | ZINC PLATED. | 4. |
| | | | | | |
| | | | | | |
| | 612020 | STAND-OFF NYLON M3×10 TRANSPILLAR. | W.K. ELECTRONICS. | TPI/GS/10/M3/I/I | 5 |
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| CHECKED | MJD |
| APPROVED | |
| DATE | 17 MAY 79 |

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TITLE: REAR INPUT ASSY 1061/71

DRAWING NUMBER: 400386 SHEET 6 OF 7

| DESIGNATOR | DATRON PART No. | DESCRIPTION | PRINCIPAL MANUFACTURER | MANUFACTURER'S PART No. | No. USED Per Assy. |
|---|---|---|---|---|---|
| | | | | | |
| | 613005 | WASHER M3 INT SHAKEPROOF ST. | GKN DISTRIBUTORS | ZINC PLATED | 13 |
| | | | | | |
| | | | | | |
| | 615001 | NUT BBA FULL HEX STEEL | | ZINC PLATED | 2 |
| | 615002 | NUT M3 FULL HEX STEEL | | ZINC PLATED | 2 |
| | | | | | |
| | | | | | |
| | | | | | |
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| | | | | | |
| | | | | | |
| | 700069 | DPDT SLIDE SWITCH | WAYCOM | S-5022 CD03-0+3/4" TRIGGER & STYLE 2 C P.C.B MOUNT CONTACTS | 1 |
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| DATE | 9 MAY 79 |
| DRAWN | W.G.SMITH |
| CHECKED | MJD |
| APPROVED | |
| DATE | 17 MAY 79 |

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TITLE: REAR INPUT ASSY. 1061/71

DRAWING NUMBER: 400386 SHEET 7 OF 7

| DESIGNATOR | DATRON PART No. | DESCRIPTION | PRINCIPAL MANUFACTURER | MANUFACTURER'S PART No. |
|---|---|---|---|---|
| R1 | 090054-1 | 8k2 ·25% 10ppm MF | ACI | SEE DRG |
| R2 | 011181 | 1k18 1% 1/8W 50ppm MF | HOLCO | H8C |
| R3 | 015900 | 590R 1% 1/8W 50ppm MF | HOLCO | H8C |
| R4 | 012940 | 294R 1% 1/8W 50ppm MF | HOLCO | H8C |
| R5 | 011470 | 147R 1% 1/8W 50ppm MF | HOLCO | H8C |
| R6 | 090054-1 | 16k ·25% 10ppm MF | ACI | SEE DRG |
| R7 * | 000434 | 430k 5% 1/4W CARBON | MULLARD | CR25 |
| R8 | 000394 | 390k 5% 1/4W CARBON | MULLARD | CR25 |
| R9 | 000103 | 10k 5% 1/4W CARBON | MULLARD | CR25 |
| R10 | 000155 | 1M5 5% 1/4W CARBON | MULLARD | CR25 |
| R11 | 000105 | 1M 5% 1/4W CARBON | MULLARD | CR25 |
| R12 | 000152 | 1k5 5% 1/4W CARBON | MULLARD | CR25 |
| R13 | 000224 | 220k 5% 1/4W CARBON | MULLARD | CR25 |
| R14 | 000333 | 33k 5% 1/4W CARBON | MULLARD | CR25 |
| R15 | 000104 | 100k 5% 1/4W CARBON | MULLARD | CR25 |
| R16 | 000685 | 6M8 5% 1/4W CARBON | MULLARD | CR25 |
| R17 | 000332 | 3k3 5% 1/4W CARBON | MULLARD | CR25 |
| R18 | 090053-1 | 100k ·25% 10ppm MF | ACI | SEE DRG |
| R19 | 090053-1 | 100k ·25% 10ppm MF | ACI | SEE DRG |
| R20 | 000274 | 270K CARBON (DO NOT SOLDER) | MULLARD | CR25 |
| R21 | 000821 | 820R 5% 1/4W CARBON | MULLARD | CR25 |
| R22 | 290026-3 | RMS KIT | DATRON | SEE DRG |
| R23 | 000270 | 27R 5% 1/4W CARBON | MULLARD | CR25 |

NOTES. * NOT USED ON ASSEMBLIES FITTED INTO 1061's

SEE SHEET 1 FOR LATEST ISSUE

| ISS | 22 | 22 | 23 | 24 | 25 | 26 | 27 |
|---|---|---|---|---|---|---|---|
| ECO | 1730 | 1801 | 1667 | 1940 | 2015 | 2105 | 2164 |
| DATE | 23.10.84 | 2.1.85 | 22.5.85 | 14.6.85 | 7.10.85 | 28.1.86 | 19.3.86 |
| CHKD | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |

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DRAWN IL | TITLE AC PCB ASSY

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DATE

DRAWING No. SHEET 400402 3

| DESIGNATOR | DATRON PART No. | DESCRIPTION | PRINCIPAL MANUFACTURER | MANUFACTURER'S PART No. |
|---|---|---|---|---|
| R24 | 000107 | 100M 10% 1/4W CARBON | ALLEN BRADLEY | CB10 |
| R25 | 000331 | 330R 5% 1/4W CARBON | MULLARD | CR25 |
| R26 | 000154 | 150k 5% 1/4W CARBON | MULLARD | CR25 |
| R27 | 000334 | 330k 5% 1/4W CARBON | MULLARD | CR25 |
| R28 | 290026-3 | RMS KIT | DATRON | SEE DRG |
| R29 | 000221 | 220R 5% 1/4W CARBON | MULLARD | CR25 |
| R30 | 000680 | 68R 5% 1/4W CARBON | MULLARD | CR25 |
| R31 | 000561 | 560R 5% 1/4W CARBON | MULLARD | CR25 |
| R32 | 000182 | 1k8 5% 1/4W CARBON | MULLARD | CR25 |
| R33 | 000333 | 33k 5% 1/4W CARBON | MULLARD | CR25 |
| R34 | 000103 | 10k 5% 1/4W CARBON | MULLARD | CR25 |
| R35 | 063500 | 50R POT 3/8"SQ. CERMET | BECKMAN | 72P |
| R36 | 047503 | 750K 1% 1/2W 100ppm CF | ALLEN BRADLEY | CC |
| R37 | 000222 | 2k2 5% 1/4W CARBON | MULLARD | CR25 |
| R38 | 000124 | 120k 5% 1/4W CARBON | MULLARD | CR25 |
| R39 | 000473 | 47k 5% 1/4W CARBON | MULLARD | CR25 |
| R40 | 008061 | 10K 5% 1/8W CARBON | MULLARD | CR16 |
| R41 | | NOT USED | | |
| R42 | | NOT USED | | |
| R43 | | NOT USED | | |
| R44 | 000331 | 330R 5% 1/4W CARBON | MULLARD | CR25 |
| R45 | 000680 | 68R 5% 1/4W CARBON | MULLARD | CR25 |
| R46 | 000472 | 4K7 5% 1/4W CARBON | MULLARD | CR25 |

NOTES.

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DRAWN IL | TITLE AC PCB ASSY

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APPROVED

DATE

DRAWING No. SHEET 400402 3

| DESIGNATOR | DATRON PART No. | DESCRIPTION | PR… MA…ER | MANUFACTURER'S PART No. | No. USED Per Assy. |
|---|---|---|---|---|---|
| R47 | 090051-1 | 4k7 ·25% 10ppm MF | ACI | SEE DRG | 1 |
| R48 | 090053-1 | 8k975·25% 10ppm MF | ACI | SEE DRG | — |
| R49 | 000912 | 9k1 5% 1/4W CARBON | MULLARD | CR25 | 1 |
| R50 | 063500 | 50R POT 3/8"SQ. CERMET | BECKMAN | 72P | — |
| R51 | 000107 | 100M 10% 1/4W CARBON | ERIE BRADLEY | CB10 | — |
| R52 | 000122 | 1k2 5% 1/4W CARBON | MULLARD | CR25 | 1 |
| R53 | 000333 | 33K 5% 1/4W CARBON | MULLARD | CR25 | — |
| R54 | 000123 | 12k 5% 1/4W CARBON | MULLARD | CR25 | 1 |
| R55 | 000681 | 680R 5% 1/4W CARBON | MULLARD | CR25 | 1 |
| R56 | 000103 | 10k 5% 1/4W CARBON | MULLARD | CR25 | — |
| R57 | 000105 | 1M 5% 1/4W CARBON | MULLARD | CR25 | — |
| R58 | 000104 | 100k 5% 1/4W CARBON | MULLARD | CR25 | — |
| R59 | 000120 | 12R 5% 1/4W CARBON | MULLARD | CR25 | 2 |
| R60 | 000120 | 12R 5% 1/4W CARBON | MULLARD | CR25 | — |
| R61 | 008065 | 2k2 5% 1/8W CARBON | MULLARD | CR16 | 1 |
| R62 | 008066 | 3k3 5% 1/8W CARBON | MULLARD | CR16 | 1 |
| R63 | 008060 | 680R 5% 1/8W CARBON | MULLARD | CR16 | 1 |
| R64 | 000222 | 2k2 5% 1/4W CARBON | MULLARD | CR25 | — |
| R65 | 000101 | 100R 5% 1/4W CARBON | MULLARD | CR25 | 4 |
| R66 | 000221 | 220R 5% 1/4W CARBON | MULLARD | CR25 | — |
| R67 | 000183 | 18k 5% 1/4W CARBON | MULLARD | CR25 | 1 |
| R68 | 090053-1 | 18k ·25% 10ppm MF | ACI | SEE DRG | — |
| R69 | 090051-1 | 4k7 ·25% 10ppm MF | ACI | SEE DRG | — |

NOTES.

SEE SHEET 2 FOR LATEST ISSUE

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DATE

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TITLE AC PCB ASSY
DRAWING NUMBER 400402
SHEET 4 OF 17

| DESIGNATOR | DATRON PART No. | DESCRIPTION | PRINCIPAL MANUFACTURER | MANUFACTURER'S PART No. | No. USED Per Assy. |
|---|---|---|---|---|---|
| R70 | 000272 | 2K7 5% 1/4W CARBON | MULLARD | CR25 | 2 |
| R71 | 000272 | 2K7 5% 1/4W CARBON | MULLARD | CR25 | — |
| R72 | 000330 | 33R 5% 1/4W CARBON | MULLARD | CR25 | 1 |
| R73 | 000105 | 1M 5% 1/4W CARBON | MULLARD | CR25 | — |
| R74 | 000824 | 820k 5% 1/4W CARBON | MULLARD | CR25 | 1 |
| R75 | 063504 | 500k POT 3/8"SQ CERMET | BECKMAN | 72P | 2 |
| R76 | 090067-1 | 62kG ·25% 10ppm MF | ACI | SEE DRG | 1 |
| R77 | 000104 | 100k 5% 1/4W CARBON | MULLARD | CR25 | — |
| R78 | 000225 | 2M2 5% 1/4W CARBON | MULLARD | CR25 | 2 |
| R79 | 011103 | 110k 1% 1/8W MF | HOLCO | H8C | 1 |
| R80 | 000561 | 560R 5% 1/4W CARBON | MULLARD | CR25 | — |
| R81 | 000101 | 100R 5% 1/4W CARBON | MULLARD | CR25 | — |
| R82 | 000101 | 100R 5% 1/4W CARBON | MULLARD | CR25 | — |
| R83 | 000104 | 100k 5% 1/4W CARBON | MULLARD | CR25 | — |
| R84 | 000184 | 180k 5% 1/4W CARBON | MULLARD | CR25 | 3 |
| R85 | 000184 | 180k 5% 1/4W CARBON | MULLARD | CR25 | — |
| R86 | 000103 | 10k 5% 1/4W CARBON | MULLARD | CR25 | — |
| R87 | 000153 | 15k 5% 1/4W CARBON | MULLARD | CR25 | 3 |
| R88 | 000680 | 68R 5% 1/4W CARBON | MULLARD | CR25 | — |
| R89 | 000221 | 220R 5% 1/4W CARBON | MULLARD | CR25 | — |
| R90 | 063204 | 200k POT 3/8"SQ. CERMET | BECKMAN | 72P | 1 |
| R91 | 000105 | 1M 5% 1/4W CARBON | MULLARD | CR25 | — |
| R92 | 000105 | 1M 5% 1/4W CARBON | MULLARD | CR25 | — |

NOTES.

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TITLE AC PCB ASSY
DRAWING NUMBER 400402
SHEET 5 OF 17

| DESIGNATOR | DATRON PART No. | DESCRIPTION | PRINCIPAL MANUFACTURER | MANUFACTURER'S PART No. | No USED Per Assy |
|---|---|---|---|---|---|
| R93 | 000225 | 2M2 5% ¼W CARBON | MULLARD | CR25 | – |
| R94 | 000564 | 560K 5% ¼W CARBON | MULLARD | CR25 | 2 |
| R95 | 090052-1 | 9k ·25% 10ppm MF | ACI | SEE DRG | 1 |
| R96 | 090052-1 | 1k ·25% 10ppm MF | ACI | SEE DRG | – |
| R97 | 000101 | 100R 5% ¼W CARBON | MULLARD | CR25 | – |
| R98 | 000471 | 470R 5% ¼W CARBON | MULLARD | CR25 | 1 |
| R99 | 000182 | 1k8 5% ¼W CARBON | MULLARD | CR25 | – |
| R100 | 000184 | 180k 5% ¼W CARBON | MULLARD | CR25 | – |
| R101 | 012210 | 221R 1% ⅛W MF | HOLCO | H8C | 1 |
| R102 | 090067-1 | 62k6 ·25% 10ppm MF | ACI | SEE DRG | – |
| R103 | 000221 | 220R 5% ¼W CARBON | MULLARD | CR25 | – |
| R104 | 000154 | 150K 5% ¼W CARBON | MULLARD | CR25 | – |
| R105 | 000564 | 560K 5% ¼W CARBON | MULLARD | CR25 | – |
| R106 | 011001 | 1k00 1% ⅛W 50ppm MF | HOLCO | H8C | 1 |
| R107 | 011823 | 182k 1% ⅛W 50ppm MF | HOLCO | H8C | 1 |
| R108 | 042215 | 22M1 1% ½W 100ppm MF | ALLEN BRADLEY | CC | 2 |
| R109 | 090066-1 | 1k ·25% 10ppm MF | ACI | SEE DRG. | 1 |
| R110 | 090066-1 | 10k1 ·25% 10ppm MF | ACI | SEE DRG | – |
| R111 | 090066-1 | 111k ·25% 10ppm MF | ACI | SEE DRG | – |
| R112 | 063504 | 500k POT 3/8"SQ CERMET | BECKMAN | 72P | – |
| R113 | 042215 | 22M1 1% ½W 100ppm MF | ALLEN BRADLEY | CC | – |
| R114 | 090066-1 | 1M ·25% 10ppm MF | ACI | SEE DRG | – |
| R115 | 000153 | 15k 5% ¼W CARBON | MULLARD | CR25 | – |

NOTES.

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DRAWING NUMBER 400402 SHEET 6 OF 17

| DESIGNATOR | DATRON PART No. | DESCRIPTION | PRINCIPAL MANUFACTURER | MANUFACTURER'S PART No. | No USED Per Assy. |
|---|---|---|---|---|---|
| R116 | 000336 | 33M 10% ¼W CARBON | ALLEN BRADLEY | CB10 | 1 |
| R117 | 000102 | 1k 5% ¼W CARBON | MULLARD | CR25 | 2 |
| R118 | 000155 | 1M5 5% ¼W CARBON | MULLARD | CR25 | – |
| R119 | 000107 | 100M 10% ¼W CARBON | ALLEN BRADLEY | CB10 | – |
| R120 | 000102 | 1k 5% ¼W CARBON | MULLARD | CR25 | – |
| R121 | 063105 | 1M POT 3/8"SQ CERMET | BECKMAN | 72P | 1 |
| R122 | 008049 | 100k 1% ½W MET-GLAZE | NEOHM | RGP0207 | 1 |
| R123 | 090066-1 | 277k ·25% 10ppm MF | ACI | SEE DRG | – |
| R124 | 090066-1 | 277k ·25% 10ppm MF | ACI | SEE DRG | – |
| R125 | 090066-1 | 277k ·25% 10ppm MF | ACI | SEE DRG | – |
| R126 | 090066-1 | 277k ·25% 10ppm MF | ACI | SEE DRG | – |
| R127 | | NOT USED | | | – |
| R128 | 000476 | 47M 10% ¼W CARBON | ALLEN BRADLEY | CB10 | 1 |
| R129 | 008059 | 820R 5% ⅛W CARBON | MULLARD | CR16 | 1 |
| R130 | 000103 | 10k 5% ¼W CARBON | MULLARD | CR25 | – |
| R131 | 000103 | 10K 5% ¼W CARBON | MULLARD | CR25 | – |
| R132 | 000473 | 47k 5% ¼W CARBON | MULLARD | CR25 | – |
| R133 | 008053 | 1k 1% ½W MET-GLAZE | NEOHM | RGP0207 | 2 |
| R134 | 008053 | 1k 1% ½W MET-GLAZE | NEOHM | RGP0207 | – |
| R135 | | NOT USED | | | – |
| R136 | 000153 | 15k 5% ¼W CARBON | MULLARD | CR25 | – |

NOTES

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TITLE AC PCB ASSY

DRAWING NUMBER 400402 SHEET 7 OF 17

| DESIGNATOR | DATRON PART No. | DESCRIPTION | PRINCIPAL MANUFACTURER | MANUFACTURER'S PART No. | No. USED Per Assy. |
|---|---|---|---|---|---|
| C1 | 120018 | 1µ5F 10% 63v POLYCARB | ASHCROFT | A2B1521B | 1 |
| C2 | 120030 | 820nF 10% 63v POLYCARB | ASHCROFT | SEE DRG. | 1 |
| C3 | 120021 | 470nF 10% 63v POLYCARB | ASHCROFT | A2B4711B | 2 |
| C4 | 120024 | 6µ8F 10% 63v POLYCARB | ASHCROFT | A2B6821B | 1 |
| C5 | 120020 | 220nF 10% 63v POLYCARB | ASHCROFT | A2B2211B | 1 |
| C6 | 150012 | 100nF 20% 35v DIP TANT | UNION CARBIDE | KR10E35 | 1 |
| C7 | 120021 | 470nF 10% 63v POLYCARB | ASHCROFT | A2B4711B | – |
| C8 | 102680 | 68pF 5% 500v CER DISC | ITT | CD10 | 1 |
| C9 | 102101 | 100pF 10% 500v CER DISC | ITT | CD10 | 2 |
| C10 | 102471 | 470pF 10% 500v CER DISC | ITT | CD10 | 1 |
| C11 | 150020 | 10µF 20% 25v DIP TANT | UNION CARBIDE | K10E25 | 8 |
| C12 | 110013 | 100nF 20% 250v POLYESTER | MULLARD | C280AEP100k | 5 |
| C13 | 150020 | 10µF 20% 25v DIP TANT | UNION CARBIDE | K10E25 | – |
| C14 | 150020 | 10µF 20% 25v DIP TANT | UNION CARBIDE | K10E25 | – |
| C15 | 101103 | 10nF 25% 250v CER DISC | ITT | CD10 | 11 |
| C16 | 150003 | 47µF 20% 6V3 DIP TANT | UNION CARBIDE | K47E6V3 | 1 |
| C17 | 110013 | 100nF 20% 250v POLYESTER | MULLARD | C280AE P100k | – |
| C18 | 100108 | 1pF 2% 100V CER. PLATE | MULLARD | 2222 683 03108 | 1 |
| C19 | 100470 | 47pF 2% 100v CER. PLATE | MULLARD | 2222 683 34479 | 3 |
| C20 | 150020 | 10µF 20% 25v DIP TANT | UNION CARBIDE | K10E25 | – |
| C21 | 110013 | 100nF 20% 250v POLYESTER | MULLARD | C280AE P100k | – |
| C22 | 100100 | 10pF 2% 100V CER. PLATE | MULLARD | 2222 683 10109 | 3 |
| C23 | 100100 | 10pF 2% 100V CER. PLATE | MULLARD | 2222 683 10109 | – |

NOTES.

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| DATE | 17.8.79 | datron ELECTRONICS LTD | |
| DRAWN | IL | TITLE | AC PCB ASSY |
| CHECKED | RJW | DRAWING NUMBER | 400402 |
| APPROVED | | SHEET | 8 OF 17 |
| DATE | | | |

| DESIGNATOR | DATRON PART No. | DESCRIPTION | PRINCIPAL MANUFACTURER | MANUFACTURER'S PART No. | No. USED Per Assy. |
|---|---|---|---|---|---|
| C24 | 100478 | 4p7F±.25pF 100V CER. PLATE | MULLARD | 2222 683 09478 | 2 |
| C25 | 100478 | 4p7F±.25pF 100V CER. PLATE | MULLARD | 2222 683 09478 | – |
| C26 | 150020 | 10µF 20% 25v DIP TANT | UNION CARBIDE | K10E25 | – |
| C27 | 150020 | 10µF 20% 25v DIP TANT | UNION CARBIDE | K10E25 | – |
| C28 | 150016 | 1µF 20% 35v DIP TANT | UNION CARBIDE | K1R0E35 | 1 |
| C29 | 130071 | 150pF 1% 160v POLYSTYRENE | SUFLEX | HSQ150/1–7/160 | 2 |
| C30 | 130013 | 18pF ±1pF 160v POLYSTYRENE | SUFLEX | HS18/1–7/160 | 1 |
| C31 | 110013 | 100nF 20% 250v POLYESTER | MULLARD | C280AE P100k | – |
| C32 | 110035 | 220nF 20% 63V POLYESTER | WIMA | MKS2 MIN | 2 |
| C33 | 110035 | 220nF 20% 63v POLYESTER | WIMA | MKS2 MIN | – |
| C34 | 100470 | 47pF 2% 100V CER. PLATE | MULLARD | 2222 683 34479 | – |
| C35 | 120022 | 1nSF 20% 100v POLYCARB | WIMA | FKC2 MIN | 2 |
| C36 | 120022 | 1nSF 20% 100v POLYCARB | WIMA | FKC2 MIN | – |
| C37 | 102101 | 100pF 10% 500v CER DISC | ITT | CD10 | – |
| C38 | 100100 | 10pF 2% 100V CER. PLATE | MULLARD | 2222 683 10109 | – |
| C39 | 102331 | 330pF 10% 500v CER DISC | ITT | CD10 | 1 |
| C40 | 150020 | 10µF 20% 25v DIP TANT | UNION CARBIDE | K10E25 | – |
| C41 | 101103 | 10nF 25% 250v CER DISC | ITT | CD10 | – |
| C42 | 130072 | 9p1F ±.5pF 160v POLYSTYRENE | SUFLEX | HS 9.1/.5–7/160 | 1 |
| C43 | 130071 | 150pF 1% 160v POLYSTYRENE | SUFLEX | HSQ150/1–7/160 | – |
| C44 | 150023 | 33µF 20% 25v DIP TANT | UNION CARBIDE | K33E25 | 1 |
| C45 | 102150 | 15pF 5% 500v CER DISC | ITT | CD10 | 1 |
| C46 | 102120 | 12pF 5% 500v CER DISC | ITT | CD10 | 1 |

NOTES

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| DATE | 17.8.79 | datron ELECTRONICS LTD | |
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| CHECKED | RJW | DRAWING NUMBER | 400402 |
| APPROVED | | SHEET | 9 OF 17 |
| DATE | | | |

| DESIGNATOR | DATRON PART No. | DESCRIPTION | PRINCIPAL MANUFACTURER | MANUFACTURER'S PART No | No. USED Per Assy |
|---|---|---|---|---|---|
| C47 | 101103 | 10nF 25% 250v CER DISC | ITT | CD10 | — |
| C48 | 140035 | 10nF 1% 125v SILV. MICA | ITT | 454/274 | 1 |
| C49 | 140034 | 1nF 1% 300v GLASS | ELECTROSIL | CYFM15 | 1 |
| C50 | 110013 | 100nF 20% 250v POLYESTER | MULLARD | C280AE P100k | — |
| C51 | 140033 | 91pF 1% 500v GLASS | ELECTROSIL | CYFM10 | 1 |
| C52 | 110026 | 6n8F 20% 100v POLYESTER | WIMA | FKS2 MIN | 1 |
| C53 | 101103 | 10nF 25% 250v CER DISC | ITT | CD10 | — |
| C54 | 101103 | 10nF 25% 250v CER DISC | ITT | CD10 | — |
| C55 | 140039 | 15pF 5% 500v GLASS | ELECTROSIL | CYFM10 | 3 |
| C56 | 150020 | 10µF 20% 25v DIP TANT | UNION CARBIDE | K10E25 | — |
| C57 | 120001 | 220nF 10% 1kV POLYCARB | SUFLEX | SN1380 | 1 |
| C58 | 140031 | 13pF 5% 500v GLASS | ELECTROSIL | CYFM10 | 1 |
| C59 | 140039 | 15pF 5% 500v GLASS | ELECTROSIL | CYFM10 | — |
| C60 | 140039 | 15pF 5% 500v GLASS | ELECTROSIL | CYFM10 | — |
| C61 | 140076-1 | 1GpF 1kV TRIMMER | TRONSER | SEE DRAWING. | 3 |
| C62 | 140076-1 | 1GpF 1kV TRIMMER | TRONSER | SEE DRAWING. | — |
| C63 | 140076-1 | 1GpF 1kV TRIMMER | TRONSER | SEE DRAWING. | — |
| C64 | 102478 | 4p7F ±·5pF 500v CER DISC | ITT | CD08 | 1 |
| C65 | | NOT USED | | | — |
| C66 | 102220 | 22pF 5% 500v CER DISC | ITT | CD10 | 1 |
| C67 | | NOT USED | | | — |
| C68 | 101103 | 10nF 25% 250V CER DISC | ITT | CD10 | — |
| C69 | 101103 | 10nF 25% 250V CER DISC | ITT | CD10 | — |

NOTES.

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TITLE AC PCB ASSY
DRAWING NUMBER 400402
SHEET 10 OF 17

| DESIGNATOR | DATRON PART No. | DESCRIPTION | PRINCIPAL MANUFACTURER | MANUFACTURER'S PART No. | No. USED Per Assy |
|---|---|---|---|---|---|
| C70 | 100330 | 33pF 2% 100V CER. PLATE | MULLARD | 2222 683 34339 | 1 |
| C71 | | NOT USED | | | — |
| C72 | | NOT USED | | | — |
| C73 | | NOT USED | | | — |
| C74 | 100332 | 3n3F 10% 100V CER. PLATE | MULLARD | 2222 630 19332 | 1 |
| C75 | 100102 | 1nF 10% 100V CER. PLATE | MULLARD | 2222 630 19102 | 2 |
| C76 | 100102 | 1nF 10% 100V CER. PLATE | MULLARD | 2222 630 19102 | — |
| C77 | 100828 | 8p2F ±·25pF 100V CER DISC | MULLARD | 2222 683 | 1 |
| C78 | | NOT USED | | | — |
| C79 | | NOT USED | | | — |
| C80 | 101103 | 10nF 25% 250V CER DISC | ITT | CD10 | — |
| C81 | 101103 | 10nF 25% 250V CER DISC | ITT | CD10 | — |
| C82 | 101103 | 10nF 25% 250V CER DISC | ITT | CD10 | — |
| C83 | | NOT USED | | | — |
| C84 | 100470 | 47pF 2% 100V CER. PLATE | MULLARD | 2222 683 34479 | — |
| C85 | 102221 | 220pF 10% 500V CER DISC | ITT | CD10 | 1 |
| C86 | 102470 | 47pF 5% 500V CER DISC | ITT | CD10 | 1 |
| C87 | 101103 | 10nF 25% 250V CER DISC | ITT | CD10 | — |

NOTES

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datron ELECTRONICS LTD.
TITLE AC PCB ASSY.
DRAWING NUMBER 400402
SHEET 11 OF 17

| | | | PRINCIPAL MANUFACTURER | MANUFACTURER'S PART No. | No. USED Per Assy |
|---|---|---|---|---|---|
| D1 | 220010 | Si HOT CARRIER DIODE | HP | HSCH1001/IN6263 | 4 |
| D2 | 200008 | 200mA 125V LL Si DIODE | FAIRCHILD | IN458A | 5 |
| D3 | 200008 | 200mA 125V LL Si DIODE | FAIRCHILD | IN458A | – |
| D4 | 200008 | 200mA 125V LL Si DIODE | FAIRCHILD | IN458A | – |
| D5 | 210100 | 10v 400mW ZENER | MULLARD | BZY88C10 | 2 |
| D6 | 200008 | 200mA 125V LL Si DIODE | FAIRCHILD | IN458A | – |
| D7 | 210100 | 10v 400mW ZENER | MULLARD | BZY88C10 | – |
| D8 | 220010 | Si HOT CARRIER DIODE | HP | HSCH1001/IN6263 | – |
| D9 | 220010 | Si HOT CARRIER DIODE | HP | HSCH1001/IN6263 | – |
| D10 | | NOT USED | | | – |
| D11 | 220021 | QUAD 29pF VARICAP DIODE | THOMPSON-CSF | BB109G4 | SET OF 4 |
| D12 | 200008 | 200mA 125V LL Si DIODE | FAIRCHILD | IN458A | – |
| D13 | 220010 | Si HOT CARRIER DIODE | HP | HSCH1001/IN6263 | – |
| D14 | 220020 | FET DIODE 100pA IR | TELEDYNE | PAD100 | 3 |
| D15 | 220020 | FET DIODE 100pA IR | TELEDYNE | PAD100 | – |
| D16 | 200001 | 75mA 75V GP Si DIODE | FAIRCHILD | IN4148 | 1 |
| D17 | 220020 | FET DIODE 100pA IR | TELEDYNE | PAD100 | – |

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TITLE: AC PCB ASSY

DRAWING NUMBER: 400402 SHEET 12 OF 17

| DESIGNATOR | DATRON PART No | DESCRIPTION | PRINCIPAL MANUFACTURER | MANUFACTURER'S PART No. | No. USED Per Assy |
|---|---|---|---|---|---|
| Q1 | 230002 | N-CHAN JFET | TELEDYNE | U1994JF | 5 |
| Q2 | 230002 | N-CHAN JFET | TELEDYNE | U1994JF | – |
| Q3 | 230027-1 | N-CHAN JFET | | SEE DRG | 1 |
| Q4 | 240013 | Si NPN TRANSISTOR | NATIONAL | BC184C/TO18 | 4 |
| Q5 | 240006 | Si NPN TRANSISTOR | NATIONAL | 2N3904/TO18 | 7 |
| Q6 | 250004 | Si PNP TRANSISTOR | NATIONAL | 2N3906/TO18 | 7 |
| Q7 | 240013 | Si NPN TRANSISTOR | NATIONAL | BC184C/TO18 | – |
| Q8 | 250008 | Si PNP TRANSISTOR | NATIONAL | BC214C/TO18 | 6 |
| Q9 | | NOT USED | | | – |
| Q10 | 250008 | Si PNP TRANSISTOR | NATIONAL | BC214C/TO18 | – |
| Q11 | 250004 | Si PNP TRANSISTOR | NATIONAL | 2N3906/TO18 | – |
| Q12 | 240006 | Si NPN TRANSISTOR | NATIONAL | 2N3904/TO18 | – |
| Q13 | 250008 | Si PNP TRANSISTOR | NATIONAL | BC214C/TO18 | – |
| Q14 | 240013 | Si NPN TRANSISTOR | NATIONAL | BC184C/TO18 | – |
| Q15 | 240006 | Si NPN TRANSISTOR | NATIONAL | 2N3904/TO18 | – |
| Q16 | 250004 | Si PNP TRANSISTOR | NATIONAL | 2N3906/TO18 | – |
| Q17 | 240006 | Si NPN TRANSISTOR | NATIONAL | 2N3904/TO18 | – |
| Q18 | 250004 | Si PNP TRANSISTOR | NATIONAL | 2N3906/TO18 | – |
| Q19 | 230035 | N-CHAN JFET | TELEDYNE | U1897JF | 1 |
| Q20 | 250008 | Si PNP TRANSISTOR | NATIONAL | BC214C/TO18 | – |
| Q21 | 250008 | Si PNP TRANSISTOR | NATIONAL | BC214C/TO18 | – |
| Q22 | 250004 | Si PNP TRANSISTOR | NATIONAL | 2N3906/TO18 | – |
| Q23 | 250004 | Si PNP TRANSISTOR | NATIONAL | 2N3906/TO18 | – |

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TITLE: AC PCB ASSY

DRAWING NUMBER: 400402 SHEET 13 OF 17

| DESIGNATOR | DATRON PART No | DESCRIPTION | PRINCIPAL MANUFACTURER | MANUFACTURER'S PART No | No. USED Per Assy |
|---|---|---|---|---|---|
| Q24 | 240006 | Si NPN TRANSISTOR | NATIONAL | 2N3904 / TO18 | – |
| Q25 | 250004 | Si PNP TRANSISTOR | NATIONAL | 2N3906 / TO18 | – |
| Q26 | 240006 | Si NPN TRANSISTOR | NATIONAL | 2N3904 / TO18 | – |
| Q27 | 250008 | Si PNP TRANSISTOR | NATIONAL | BC214C / TO18 | – |
| Q28 | 240013 | Si NPN TRANSISTOR | NATIONAL | BC184C / TO18 | – |
| Q29 | 240006 | Si NPN TRANSISTOR | NATIONAL | 2N3904 / TO18 | – |
| Q30 | 230003 | N-CHAN JFET | TELEDYNE | U1899 JF | 1 |
| Q31 | 230002 | N-CHAN JFET | TELEDYNE | U1994 JF | – |
| Q32 | 230031 | N-CHAN DUAL JFET | TELEDYNE | SU2656M | 2 |
| Q33 | 240019 | Si NPN DUAL TRANSISTOR | PMI | MAT01H | 1 |
| Q34 | 230031 | N-CHAN DUAL JFET | TELEDYNE | SU2656M | – |
| Q35 | 230002 | N-CHAN JFET | TELEDYNE | U1994 JF | – |
| Q36 | 230002 | N-CHAN JFET | TELEDYNE | U1994 JF | – |
| Q37 | 230074 | P-CHAN JFET | SILICONIX | J271 | 1 |

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TITLE: AC PCB ASSY

DRAWING NUMBER: 400402

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| DESIGNATOR | DATRON PART No. | DESCRIPTION | PRINCIPAL MANUFACTURER | MANUFACTURER'S PART No. | No. USED Per Assy |
|---|---|---|---|---|---|
| M1 | 260027 | 714 OP AMP | FAIRCHILD | μA714HC | 5 |
| M2 | 260027 | 714 OP AMP | FAIRCHILD | μA714HC | – |
| M3 | 290131-1 | QUAD 'D' REGISTER HYBRID | | SEE DRG | 2 |
| M4 | 290131-1 | QUAD 'D' REGISTER HYBRID | | SEE DRG | – |
| M5 | 290132-1 | DUAL 'D' FLIP-FLOP HYBRID | | SEE DRG | 1 |
| M6 | 290026 | RMS KIT | DATRON | SEE DRG | – |
| M7 | 290077 | 7x DARLINGTON DRIVER | SPRAGUE / EXAR | ULN2004A / XR2204CP | 1 |
| M8 | 260027 | 714 OP AMP | FAIRCHILD | μA714HC | – |
| M9 | 260027 | 714 OP AMP | FAIRCHILD | μA714HC | – |
| M10 | 290066 | FREQ. SENSITIVE SWITCH | CONSUMER MICROCIRCUITS | FX301L | 1 |
| M11 | 260027 | 714 OP AMP | FAIRCHILD | μA714HC | – |
| RL1 | 330012-3 | RELAY REED 1A GUARDED | HAMLIN | HE721A5134 | 4 |
| RL2 | 330018-1 | RELAY 2P2W 7v HOLD-IN | P & B | SEE DRAWING | 2 |
| RL3 | 330018-1 | RELAY 2P2W 7v HOLD-IN | P & B | SEE DRAWING | – |
| RL4 | 330012-3 | RELAY REED 1A GUARDED | HAMLIN | HE721A5134 | – |
| RL5 | 330012-3 | RELAY REED 1A GUARDED | HAMLIN | HE721A5134 | – |
| RL6 | 330012-3 | RELAY REED 1A GUARDED | HAMLIN | HE721A5134 | – |

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TITLE: AC PCB ASSY

DRAWING NUMBER: 400402

SHEET 15 OF 17

| DESIGNATOR | DATRON PART No | DESCRIPTION | PRINCIPAL MANUFACTURER | MANUFACTURER'S PART No. | No. USED Per Assy |
|---|---|---|---|---|---|
| TPs, TLs | 540002 | 22 SWG TINNED COPPER WIRE | | | A/R |
| | 590004 | SLEEVE — PTFE | HELLERMANN ELECTRIC | FE10 | A/R |
| J1 | 571095\C | 16 WAY AP/3M RIBBON CABLE | DATRON | | 1 |
| J2 | 605052 | 8 WAY POLARISED SOCKET | MOLEX | (22-01-2085) 6471-8-1 | 1 |
| | 590055 | SLEEVE Ø1·0 SIL. RUBBER | HELLERMANN ELECTRIC | HIS CONT. BLACK | 50mm |
| | 400379/1-3 | WIRE/TERMINAL ASSY. | | | 1 |
| | 410136-9 | PCB | | | 1 |
| | 450249-3 | GUARD SHIELD | | | 1 |
| | 459112-2 | RELAY BRACKET | | | 2 |
| | 605056 | CRIMP TERMINAL | MOLEX | 4809-TL | 1 |
| | 512999 | 7/0·2 PTFE INSULATED (WHITE) WIRE | | | A/R |
| | 590001 | SLEEVE MAX. CABLE Ø3·0 | HELLERMAN ELECTRIC | HIS×20mm BLACK HELSYN | 7 |
| | 602001 | FSV TERMINAL | MOLEX | 02-04-1875 | 4 |
| | 602004 | BREAKAWAY TERMINAL STRP | MOLEX | 05-30-0001 | 16 |
| | 605060 | 14 PIN DIL SOCKET | JERMYN | J23-18014 | 1 |
| | 605061 | 16 PIN DIL SOCKET | JERMYN | J23-18016 | 2 |
| | 605057 | CRIMP TERMINAL | MOLEX | 4809-GL | 1 |
| | 605128 | 16 PIN DIL. SKT. HIGH PROFILE | CA | CA-16S-TSD | 1 |
| | 611007 | SCREW M3×6mm STEEL POZI- | CSK ZN/PLATED GKN | | 3 |
| | 611016 | SCREW M3×8mm STEEL POZI- | PAN ZN/PLATED GKN | | 5 |

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TITLE: AC PCB ASSY.

DRAWING NUMBER 400402 SHEET 16 OF 17

| DESIGNATOR | DATRON PART No. | DESCRIPTION | PRINCIPAL MANUFACTURER | MANUFACTURER'S PART No. | No. USED Per Assy. |
|---|---|---|---|---|---|
| | 612021 | STANDOFF M3×16 HEX STEEL | HARWIN | R6077-M3 | 3 |
| | 613005 | WASHER M3 INT./SHAKEPROOF ST. | GKN DISTRIBUTORS | ZINC PLATED | 5 |
| | 613014 | WASHER M2·5 INT/SHAKEPROOF ST. | GKN DISTRIBUTORS | ZINC PLATED | 2 |
| | 615002 | NUT M3 FULL HEX STEEL | | ZINC PLATED | 2 |
| | 615005 | NUT 3-48 UNC FULL HEX ST. | | ZINC PLATED | 2 |
| | 617010 | NYLATCH PLUNGER HN3P | ORDER FROM C.J. FOX & SONS | HN3P-32-4-1 | 4 |
| | 617011 | NYLATCH GROMMET HN3G | ORDER FROM C.J. FOX & SONS | HN3G-32-1 | 4 |
| | 620003 | SOLDER PCB TERMINAL LUG | HARWIN | H 2105A | 2 |
| | 620005 | CLOVERLEAF PTFE TERMINAL | SEALECTRO | FTE 15 P20 | 15 |
| | 630107 | BRASS STRIP ·375mm THK×15·5 | RIGHTON | ½ HARD | 130mm |
| | 620007 | TEST POINT TERMINAL | MICROVAR | C30 | .7 |

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TITLE: AC PCB ASSY.

DRAWING NUMBER 400402 SHEET 17 OF 17

| DESIGNATOR | DATRON PART No. | DESCRIPTION | PRINCIPAL MANUFACTURER | MANUFACTURER'S PART No. | No. USED Per Assy. |
|---|---|---|---|---|---|
| R1 | 000104 | 100k 5% 1/4W CARBON | MULLARD | CR25 | 3 |
| R2 | 000103 | 10k 5% 1/4W CARBON | MULLARD | CR25 | 1 |
| R3 | 000104 | 100k 5% 1/4W CARBON | MULLARD | CR25 | — |
| R4 | 000104 | 100k 5% 1/4W CARBON | MULLARD | CR25 | — |
| R5 | 000102 | 1K 5% 1/4W CARBON | MULLARD | CR25 | 2 |
| R6 | 000561 | 560R 5% 1/4W CARBON | MULLARD | CR25 | 1 |
| R7 | 000102 | 1k 5% 1/4W CARBON | MULLARD | CR25 | — |
| R8 | 000332 | 3K3 5% 1/4W CARBON | MULLARD | CR25 | 1 |
| | | | | | |
| AN1 | 090017 | 100k x 7 2% NETWORK | BECKMAN | 764-1-R100k | 1 |
| C1 | 150015 | 10μF 20% 35v DIP. TANT. | UNION CARBIDE | K10E35 | 3 |
| C2 | 104025 | 100nF +80 -20% 50V CER DISC | SIEMENS | B37449 | 9 |
| C3 | 150015 | 10μF 20% 35v DIP. TANT. | UNION CARBIDE | K10E35 | — |
| C4 | 150015 | 10μF 20% 35v DIP. TANT. | UNION CARBIDE | K10E35 | — |
| C5 | 150016 | 1μF 20% 35V DIP. TANT. | UNION CARBIDE | K1R0E35 | 1 |
| C6 | 150012 | 100nF 20% 35V DIP. TANT | UNION CARBIDE | KR10E35 | 1 |
| C7 | 104025 | 100nF +80 -20% 50V CER DISC | SIEMENS | B37449 | — |
| C8 | 101103 | 10nF 25% 250V CER. DISC | ITT | CD10 | 1 |
| C9 | 102681 | 680pF 10% 500v CER DISC | ITT | CD10 | 1 |
| C10 | 102101 | 100pF 10% 500V CER DISC | ITT | CD10 | 1 |
| C11 | 104025 | 100nF +80 -20% 50V CER DISC | SIEMENS | B37449 | — |
| C12 | 104025 | 100nF +80 -20% 50V CER DISC | SIEMENS | B37449 | — |
| C13 | 104025 | 100nF +80 -20% 50V CER DISC | SIEMENS | B37449 | — |

NOTES.

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| E.C.O | 1681 | | | | | | | | | | | | |
| DATE | 26-7-84 | | | | | | | | | | | | |
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TITLE 1061/1065/1071/1081 IEEE PCB. ASSY.

DRAWING NUMBER 400427 SHEET 2 OF 5

| DESIGNATOR | DATRON PART No. | DESCRIPTION | PRINCIPAL MANUFACTURER | MANUFACTURER'S PART No. | No. USED Per Assy. |
|---|---|---|---|---|---|
| C14 | 104025 | 100nF +80 -20% 50V CER DISC | SIEMENS | B37449 | — |
| C15 | 104025 | 100nF +80 -20% 50V CER DISC | SIEMENS | B37449 | — |
| C16 | 104025 | 100nF +80 -20% 50V CER DISC | SIEMENS | B37449 | — |
| C17 | 104025 | 100nF +80 -20% 50V CER DISC | SIEMENS | B37449 | — |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| M1 | 280086 | BI-DIRECTIONAL BUS TRANSC'R | MOTOROLA | MC3447P | 2 |
| M2 | 280086 | BI-DIRECTIONAL BUS TRANSC'R | MOTOROLA | MC3447P | — |

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TITLE 1061/1065/1071/1081 IEEE. PCB. ASSY.

DRAWING NUMBER 400427 SHEET 3 OF 5

| DESIGNATOR | DATRON PART No. | DESCRIPTION | PRINCIPAL MANUFACTURER | MANUFACTURER'S PART No. | No. USED Per Assy. |
|---|---|---|---|---|---|
| M3 | | FITTED AT FINAL ASSY. | | | — |
| M4 | | NOT USED | | | — |
| M5 | | NOT USED | | | — |
| M6 | 280024 | TRI-STATE HEX. BUFFER | MOTOROLA | MC14503 BCP | 1 |
| M7 | | NOT USED | | | — |
| M8 | 270050 | HEX. INVERTER LS | NATIONAL | DM74LS04N | 1 |
| M9 | 280064 | GPIA | MOTOROLA | MC68488P | 1 |
| M10 | 280068 | DUAL PREC. M'STABLE M'VIBR. | MOTOROLA | MC14538BCP | 1 |
| M11 | 270055 | DUAL 4 I/P NAND LS | NATIONAL | DM74LS20N | 2 |
| M12 | 270055 | DUAL 4 I/P NAND LS | NATIONAL | DM74LS20N | — |
| M13 | 270051 | DUAL 4 I/P AND LS | NATIONAL | DM74LS21N | 1 |
| | | | | | |
| | | | | | |
| J1 | 605102 | 24 WAY DIL. SOCKET GOLD | CA | CA-24-S 105D | 1 |
| J2 | 605002 | 16 WAY DIL. LOW PROFILE SKT. | JERMYN OR ANTIFERENCE | A23-2001/Y OR ICN-63-S3 | 1 |
| J3 | 573120/C | 24 WAY AP/3M CABLE ASSY | DATRON | | 1 |
| J4 | 605051 | 4 WAY POLARISED SOCKET | MOLEX | (22-01-2045) 6471-4-1 | 1 |
| | | | | | |
| | 400379/1 | WIRE/TERMINAL ASSY | | | 2 |
| | 410165-4A | PCB | | | 1 |
| | 540002 | 22 SWG BTC WIRE | | | A/R |
| | 590004 | SLEEVE - PTFE | HELLERMANN ELECTRIC | FE10 | A/R |
| | 605060 | 14 WAY DIL. SOCKET | ASTRALUX OR JERMYN | ICL-143-S3T | 4 |

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| DATE | DRAWING NUMBER 400427 — SHEET 4 OF 5 |

| DESIGNATOR | DATRON PART No. | DESCRIPTION | PRINCIPAL MANUFACTURER | MANUFACTURER'S PART No. | No. USED Per Assy. |
|---|---|---|---|---|---|
| | 605061 | 16 WAY DIL. SOCKET | ASTRALUX OR JERMYN | ICL-163-S6T | 2 |
| | 605050 | 40 PIN DIL. LOW PROF! SKT | AUGAT | 340-AG39D | 1 |
| | | | | | |
| | 605064 | 24 PIN DIL SOCKET | AUGAT | 324-AG39D | 3 |
| | 605056 | CRIMP TERMINAL | MOLEX | 4809-TL | 2 |
| | | | | | |
| | 606005 | CLIP FOR 605002 | ANTIFERENCE | RC-74 | 1 |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | 620007 | TEST POINT TERMINAL | MICROVAR | C30 | 5 |
| | 900004 | SILICONE RUBBER COMPOUND | RS | 555-588 | A/R |
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| DATE | DRAWING NUMBER 400427 — SHEET 5 OF 5 |

| DESIGNATOR | DATRON PART No. | DESCRIPTION | PRINCIPAL MANUFACTURER | MANUFACTURER'S PART No. | No. USED Per Assy. |
|---|---|---|---|---|---|
| R1 | | NOT USED | | | – |
| R2 | | NOT USED | | | – |
| R3 | 000473 | 47k 5% 1/4W CARBON | MULLARD | CR25 | 4 |
| R4 | 000223 | 22k 5% 1/4W CARBON | MULLARD | CR25 | 2 |
| R5 | 080045-2 | 5k5 ·01% 3ppm M.FOIL | VISHAY | SEE DRG | 4 |
| R6 | 000152 | 1k5 5% 1/4W CARBON | MULLARD | CR25 | 1 |
| R7 | 000473 | 47k 5% 1/4W CARBON | MULLARD | CR25 | – |
| R8 | 000473 | 47k 5% 1/4W CARBON | MULLARD | CR25 | – |
| R9 | 000103 | 10k 5% 1/4W CARBON | MULLARD | CR25 | 9 |
| R10 | 000333 | 33k 5% 1/4W CARBON | MULLARD | CR25 | 2 |
| R11 | 000105 | 1M 5% 1/4W CARBON | MULLARD | CR25 | 7 |
| R12 | 000103 | 10k 5% 1/4W CARBON | MULLARD | CR25 | – |
| R13 | 000155 | 1M5 5% 1/4W CARBON | MULLARD | CR25 | 1 |
| R14 | 000105 | 1M 5% 1/4W CARBON | MULLARD | CR25 | – |
| R15 | 000333 | 33k 5% 1/4W CARBON | MULLARD | CR25 | – |
| R16 | | NOT USED | | | – |
| R17 | | NOT USED | | | – |
| R18 | | NOT USED | | | – |
| R19 | | NOT USED | | | – |
| R20 | 000223 | 22k 5% 1/4W CARBON | MULLARD | CR25 | – |
| R21 | 000102 | 1k 5% 1/4W CARBON | MULLARD | CR25 | 3 |
| R22 | 000473 | 47k 5% 1/4W CARBON | MULLARD | CR25 | – |
| R23 | 000101 | 100R 5% 1/4W CARBON | MULLARD | CR25 | 6 |

NOTES. CIRCUIT DIAGRAM = 430552
CHECK PROCEDURE = 460552
CHECK LIST = 470552
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| ISS | 1 | 2 | 2 | 3 |
|---|---|---|---|---|
| ECO | RELEASED | 1700/1702 | 1801 | 1824 |
| DATE | 13.9.84 | 14.9.84 | 3.1.85 | 24.1.85 |
| CHKD | | | | |

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| DATE | 5.7.83 |
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TITLE 1061A AC PCB ASSY
1062 OPTION 12

DRAWING NUMBER 400552 SHEET 2 OF 20

| DESIGNATOR | DATRON PART No. | DESCRIPTION | PRINCIPAL MANUFACTURER | MANUFACTURER'S PART No. | No. USED Per Assy. |
|---|---|---|---|---|---|
| R24 | 000562 | 5k6 5% 1/4W CARBON | MULLARD | CR25 | 3 |
| R25 | 000122 | 1k2 5% 1/4W CARBON | MULLARD | CR25 | 1 |
| R26 | 000102 | 1k 5% 1/4W CARBON | MULLARD | CR25 | – |
| R27 | | FSV | | | 1 |
| R28 | 290026 | RMS KIT | DATRON | SEE DRG | 1 KIT |
| R29 | 000120 | 12R 5% 1/4W CARBON | MULLARD | CR25 | 1 |
| R30 | 090111-1 | 100M 5% THICK FILM | HOLSWORTHY | SEE DRG | 3 |
| R31 | 000331 | 330R 5% 1/4W CARBON | MULLARD | CR25 | 3 |
| R32 | 012743 | 274k 1% 1/8W 50ppm MF | HOLCO | H8C | 1 |
| R33 | 011003 | 100k 1% 1/8W 50ppm MF | HOLCO | H8C | 1 |
| R34 | 290026 | RMS KIT | DATRON | SEE DRG | – |
| R35 | 000221 | 220R 5% 1/4W CARBON | MULLARD | CR25 | 5 |
| R36 | 000680 | 68R 5% 1/4W CARBON | MULLARD | CR25 | 3 |
| R37 | 000271 | 270R 5% 1/4W CARBON | MULLARD | CR25 | 2 |
| R38 | 000271 | 270R 5% 1/4W CARBON | MULLARD | CR25 | – |
| R39 | 000224 | 220k 5% 1/4W CARBON | MULLARD | CR25 | 1 |
| R40 | 000104 | 100k 5% 1/4W CARBON | MULLARD | CR25 | 9 |
| R41 | 000103 | 10k 5% 1/4W CARBON | MULLARD | CR25 | – |
| R42 | 000104 | 100k 5% 1/4W CARBON | MULLARD | CR25 | – |
| R43 | 000104 | 100k 5% 1/4W CARBON | MULLARD | CR25 | – |
| R44 | | NOT USED | | | – |
| R45 | 016811 | 6k81 1/8W 50ppm MF | HOLCO | H8C | 1 |
| R46 | 012742 | 27k4 1% 1/8W 50ppm MF | HOLCO | H8C | 1 |

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TITLE 1061A AC PCB ASSY
1062

DRAWING NUMBER 400552 SHEET 3 OF 20

| DESIGNATOR | DATRON PART No. | DESCRIPTION | PRINCIPAL MANUFACTURER | MANUFACTURER'S PART No. | No. USED Per Assy. |
|---|---|---|---|---|---|
| R47 | | NOT USED | | | — |
| R48 | | NOT USED | | | — |
| R49 | | NOT USED | | | — |
| R50 | | NOT USED | | | — |
| R51 | | NOT USED | | | — |
| R52 | 080064-B | 28k0 ·1% 3ppm M.FOIL | VISHAY | SEE DRG | 1 |
| R53 | 080065 | 1k60 ·1% 10ppm M.FOIL | VISHAY | VSRC1 | 1 |
| R54 | 018250 | 825R 1% 50ppm M.F | HOLCO | H8C | 1 |
| R55 | 013920 | 392R 1% 50ppm M.F | HOLCO | H8C | 1 |
| R56 | 012000 | 200R 1% 50ppm M.F | HOLCO | H8C | 1 |
| R57 | 000182 | 1k8 5% ¼W CARBON | MULLARD | CR25 | 4 |
| R58 | 000151 | 150R 5% ¼W CARBON | MULLARD | CR25 | 1 |
| R59 | 000752 | 7k5 5% ¼W CARBON | MULLARD | CR25 | 3 |
| R60 | 000100 | 10R 5% ⅓W CARBON | MULLARD | CR25 | 4 |
| R61 | 063100 | 10R POT ⅜ SQ. CERMET | BECKMAN | 72P | 2 |
| R62 | 063100 | 10R POT ⅜ SQ. CERMET | BECKMAN | 72P | — |
| R63 | 000100 | 10R 5% ¼W CARBON | MULLARD | CR25 | — |
| R64 | 012003 | 200k 1% ⅛W 50ppm MF | HOLCO | H8C | 1 |
| R65 | 000124 | 120k 5% ¼W CARBON | MULLARD | CR25 | 1 |
| R66 | | NOT USED | | | — |
| R67 | | NOT USED | | | — |
| R68 | | NOT USED | | | — |
| R69 | 000103 | 10k 5% ¼W CARBON | MULLARD | CR25 | — |

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TITLE 1061A 1062 AC PCB ASSY

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| DESIGNATOR | DATRON PART No. | DESCRIPTION | PRINCIPAL MANUFACTURER | MANUFACTURER'S PART No. | No. USED Per Assy. |
|---|---|---|---|---|---|
| R70 | 080045-2 | 5k5 ·01% 3ppm M.FOIL | VISHAY | SEE DRG | — |
| R71 | 000331 | 330R 5% ¼W CARBON | MULLARD | CR25 | — |
| R72 | 000680 | 68R 5% ¼W CARBON | MULLARD | CR25 | — |
| R73 | 000562 | 5k6 5% ¼W CARBON | MULLARD | CR25 | — |
| R74 | 080045-2 | 5k5 ·01% 3ppm M.FOIL | VISHAY | SEE DRG | — |
| R75 | 080044-2 | 4k9925 ·01% 3ppm M.FOIL | VISHAY | SEE DRG | 1 |
| R76 | 014991 | 4k99 1% ⅛W 50ppm MF | HOLCO | H8C | 1 |
| R77 | 090111-1 | 100M 5% THICK FILM | HOLSWORTHY | SEE DRG | — |
| R78 | 000182 | 1k8 5% ¼W CARBON | MULLARD | CR25 | — |
| R79 | 000752 | 7k5 5% ¼W CARBON | MULLARD | CR25 | — |
| R80 | 000471 | 470R 5% ¼W CARBON | MULLARD | CR25 | 1 |
| R81 | 000105 | 1M 5% ¼W CARBON | MULLARD | CR25 | — |
| R82 | 000475 | 4M7 5% ¼W CARBON | MULLARD | CR25 | 1 |
| R83 | | NOT USED | | | — |
| R84 | 000103 | 10k 5% ¼W CARBON | MULLARD | CR25 | — |
| R85 | 000105 | 1M 5% ¼W CARBON | MULLARD | CR25 | — |
| R86 | 013323 | 332k 1% ⅛W 50ppm MF | HOLCO | H8C | 1 |
| R87 | 011503 | 150k 1% ⅛W 50ppm MF | HOLCO | H8C | 1 |
| R88 | 000105 | 1M 5% ¼W CARBON | MULLARD | CR25 | — |
| R89 | 000104 | 100k 5% ¼W CARBON | MULLARD | CR25 | — |
| R90 | 000182 | 1k8 5% ¼W CARBON | MULLARD | CR25 | — |
| R91 | 000101 | 100R 5% ¼W CARBON | MULLARD | CR25 | — |
| R92 | 000221 | 220R 5% ¼W CARBON | MULLARD | CR25 | — |

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| DESIGNATOR | DATRON PART No. | DESCRIPTION | PRINCIPAL MANUFACTURER | MANUFACTURER'S PART No. | No. USED Per Assy |
|---|---|---|---|---|---|
| R93 | 000221 | 220R 5% 1/4W CARBON | MULLARD | CR25 | — |
| R94 | 011002 | 10kO 1% 1/8W 50ppm MF | HOLCO | H8C | 1 |
| R95 | 000272 | 2k7 5% 1/4W CARBON | MULLARD | CR25 | 2 |
| R96 | 000272 | 2k7 5% 1/4W CARBON | MULLARD | CR25 | — |
| R97 | 080047-2 | 10k ·01% 3ppm M. FOIL | VISHAY | SEE DRG | 1 |
| R98 | 080045-2 | 5k5 ·01% 3ppm M. FOIL | VISHAY | SEE DRG | — |
| R99 | 000101 | 100R 5% 1/4W CARBON | MULLARD | CR25 | — |
| R100 | 000335 | 3M3 5% 1/4W CARBON | MULLARD | CR25 | 1 |
| R101 | 063105 | 1M POT 3/8 SQ CERMET | BECKMAN | 72P | 1 |
| R102 | 000225 | 2M2 5% 1/4W CARBON | MULLARD | CR25 | 1 |
| R103 | 012001 | 2k00 1% 1/8W 50ppm MF | HOLCO | H8C | 4 |
| R104 | 012001 | 2k00 1% 1/8W 50ppm | HOLCO | H8C | — |
| R105 | 000221 | 220R 5% 1/4W CARBON | MULLARD | CR25 | — |
| R106 | 000104 | 100k 5% 1/4W CARBON | MULLARD | CR25 | — |
| R107 | | NOT USED | | | — |
| R108 | | NOT USED | | | — |
| R109 | | NOT USED | | | — |
| R110 | | NOT USED | | | — |
| R111 | | NOT USED | | | — |
| R112 | 013923 | 392k 1% 1/8W 50ppm MF | HOLCO | H8C | 2 |
| R113 | 013923 | 392k 1% 1/8W 50ppm MF | HOLCO | H8C | — |
| R114 | 000104 | 100k 5% 1/4W CARBON | MULLARD | CR25 | — |
| R115 | 000222 | 2k2 5% 1/4W CARBON | MULLARD | CR25 | 3 |

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| DESIGNATOR | DATRON PART No. | DESCRIPTION | PRINCIPAL MANUFACTURER | MANUFACTURER'S PART No. | No. USED Per Assy. |
|---|---|---|---|---|---|
| R116 | 000752 | 7k5 5% 1/4W CARBON | MULLARD | CR25 | — |
| R117 | 000680 | 68R 5% 1/4W CARBON | MULLARD | CR25 | — |
| R118 | 000221 | 220R 5% 1/4W CARBON | MULLARD | CR25 | — |
| R119 | 063204 | 200k POT 3/8 SQ. CERMET | BECKMAN | 72P. | 1 |
| R120 | 000274 | 270k 5% 1/4W CARBON | MULLARD | CR25 | 1 |
| R121 | 080043-2 | 1k ·1% 3ppm M. FOIL | VISHAY | SEE DRG | 2 |
| R122 | 080046-2 | 9k ·1% 3ppm M. FOIL | VISHAY | SEE DRG | 1 |
| R123 | 000103 | 10k 5% 1/4W CARBON | MULLARD | CR25 | — |
| R124 | | NOT USED | | | — |
| R125 | 012001 | 2k00 1% 1/8W 50ppm MF | HOLCO | H8C | 1 |
| R126 | 000102 | 1k 5% 1/4W CARBON | MULLARD | CR25 | — |
| R127 | 000682 | 6k8 5% 1/4W CARBON | MULLARD | CR25 | 2 |
| R128 | 000101 | 100R 5% 1/4W CARBON | MULLARD | CR25 | — |
| R129 | 000331 | 330R 5% 1/4W CARBON | MULLARD | CR25 | — |
| R130 | 000182 | 1k8 5% 1/4W CARBON | MULLARD | CR25 | — |
| R131 | 080050-2 | 62k6 ·1% 3ppm M. FOIL | VISHAY | SEE DRG | 2 |
| R132 | 080050-2 | 62k6 ·1% 3ppm M. FOIL | VISHAY | SEE DRG | — |
| R133 | 000330 | 33R 5% 1/4W CARBON | MULLARD | CR25 | 1 |
| R134 | 000104 | 100k 5% 1/4W CARBON | MULLARD | CR25 | — |
| R135 | 000103 | 10k 5% 1/4W CARBON | MULLARD | CR25 | — |
| R136 | 018251 | 8k25 1% 1/8W 50ppm MF | HOLCO | H8C | 1 |
| R137 | | NOT USED | | | — |
| R138 | | NOT USED | | | — |

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| DESIGNATOR | DATRON PART No. | DESCRIPTION | PRINCIPAL MANUFACTURER | MANUFACTURER'S PART No. | No. USED Per Assy. |
|---|---|---|---|---|---|
| R139 | 011822 | 18k2 1% 1/8W 50ppm MF | HOLCO | H8C | 2 |
| R140 | 014321 | 4k32 1% 1/8W 50ppm MF | HOLCO | H8C | 1 |
| R141 | | NOT USED | | | — |
| R142 | 080043-2 | 1k ·1% 3 ppm M.FOIL | VISHAY | SEE DRG | — |
| R143 | 080048-2 | 10k1 ·1% 3 ppm M.FOIL | VISHAY | SEE DRG | 1 |
| R144 | 080051-2 | 111k ·1% 3 ppm M.FOIL | VISHAY | SEE DRG | 1 |
| R145 | 000474 | 470K 5% 1/3W CARBON | MULLARD | CR25 | 1 |
| R146 | 080062 | 1M ·1% 5 ppm M.FILM | VTM | MAR7-T16-1M-0·1% | 1 |
| R147 | 000101 | 100R 5% 1/4W CARBON | MULLARD | CR25 | — |
| R148 | 063104 | 100k POT 3/8 SQ. CERMET | BECKMAN | 72P | 1 |
| R149 | 011822 | 18k2 1% 1/8W 50ppm MF | HOLCO | H8C | — |
| R150 | 000100 | 10R 5% 1/4W CARBON | MULLARD | CR25 | — |
| R151 | 000100 | 10R 5% 1/4W CARBON | MULLARD | CR25 | — |
| R152 | | NOT USED | | | — |
| R153 | 000104 | 100k 5% 1/4W CARBON | MULLARD | CR25 | — |
| R154 | 013320 | 332R 1% 1/8W 50ppm MF | HOLCO | H8C | 1 |
| R155 | 041004 | 1M 1% 1/2W 100ppm CF | ALLEN BRADLEY | CC | 1 |
| R156 | 011000 | 100R 1% 1/8W 50ppm MF | HOLCO | H8C | 1 |
| R157 | 000105 | 1M 5% 1/4W CARBON | MULLARD | CR25 | — |
| R158 | 090111-1 | 100M 5% THICK FILM | HOLSWORTHY | SEE DRG | — |
| R159 | 000241 | 240R 5% 1/4W CARBON | MULLARD | CR25 | 1 |
| R160 | 012001 | 2k00 1% 1/8W 50ppm MF | HOLCO | H8C | — |
| R161 | 000101 | 100R 5% 1/4W CARBON | MULLARD | CR25 | — |

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| DESIGNATOR | DATRON PART No. | DESCRIPTION | PRINCIPAL MANUFACTURER | MANUFACTURER'S PART No. | No. USED Per Assy. |
|---|---|---|---|---|---|
| R162 | 012151 | 2k15 1% 1/8W 50ppm MF | HOLCO | H8C | 1 |
| R163 | 000912 | 9k1 5% 1/4W CARBON | MULLARD | CR25 | 1 |
| R164 | 008047 | 470R 1% 1/2W MET-GLAZE | NEOHM | RGP0207 | 1 |
| R165 | 008049 | 100k 1% 1/2W MET-GLAZE | NEOHM | RGP0207 | 1 |
| R166 | 008048 | 560R 1% 1/2W MET-GLAZE | NEOHM | RGP0207 | 1 |
| R167 | 080052-2 | 277k ·1% 3 ppm M.FOIL | VISHAY | SEE DRG | 4 |
| R168 | 080052-2 | 277k ·1% 3 ppm M.FOIL | VISHAY | SEE DRG | — |
| R169 | 080052-2 | 277k ·1% 3 ppm M.FOIL | VISHAY | SEE DRG | — |
| R170 | 080052-2 | 277k ·1% 3 ppm M.FOIL | VISHAY | SEE DRG | — |
| R171 | 000104 | 100k 5% 1/3W CARBON | MULLARD | CR25 | — |
| R172 | 000562 | 5k6 5% 1/3W CARBON | MULLARD | CR25 | — |
| R173 | 000822 | 8k2 5% 1/3W CARBON | MULLARD | CR25 | 1 |
| R174 | 000105 | 1M 5% 1/3W CARBON | MULLARD | CR25 | — |
| R175 | 000222 | 2k2 5% 1/3W CARBON | MULLARD | CR25 | — |
| R176 | 000222 | 2k2 5% 1/3W CARBON | MULLARD | CR25 | — |
| R177 | 000821 | 820R 5% 1/3W CARBON | MULLARD | CR25 | 2 |
| R178 | 000821 | 820R 5% 1/3W CARBON | MULLARD | CR25 | — |
| R179 | 000682 | 6k8 5% 1/3W CARBON | MULLARD | CR25 | — |
| R180 | 000103 | 10k 5% 1/3W CARBON | MULLARD | CR25 | — |
| R181 | 000103 | 10k 5% 1/3W CARBON | MULLARD | CR25 | — |
| R182 | 000154 | 150k 5% 1/3W CARBON | MULLARD | CR25 | 1 |
| | | | | | |
| AN1 | 090017 | 100k ×7 2% NETWORK | BECKMAN | L08-1-R100k | 1 |

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| DESIGNATOR | DATRON PART No. | DESCRIPTION | PRINCIPAL MANUFACTURER | MANUFACTURER'S PART No. | No. USED Per Assy. |
|---|---|---|---|---|---|
| C1 | 150020 | 10µF 20% 25V DIP TANT | UNION CARBIDE | K10E25 | 11 |
| C2 | 150020 | 10µF 20% 25V DIP TANT | UNION CARBIDE | K10E25 | — |
| C3 | | NOT USED | | | — |
| C4 | 110042 | 100nF 20% 63V POLYESTER | WIMA | MKS2 | 21 |
| C5 | 120018 | 1µF 10% 63V POLYCARB | ASHCROFT | A2B1521B | 1 |
| C6 | 110015 | 15nF 20% 63V POLYESTER | WIMA | MKS2 | 1 |
| C7 | 110042 | 100nF 20% 63V POLYESTER | WIMA | MKS2 | — |
| C8 | 110042 | 100nF 20% 63V POLYESTER | WIMA | MKS2 | — |
| C9 | 102101 | 100pF 10% 500V CER DISC | ITT | CD10 | 3 |
| C10 | 150020 | 10µF 20% 25V DIP TANT | UNION CARBIDE | K10E25 | — |
| C11 | 150020 | 10µF 20% 25V DIP TANT | UNION CARBIDE | K10E25 | — |
| C12 | 150020 | 10µF 20% 25V DIP TANT | UNION CARBIDE | K10E25 | — |
| C13 | 110042 | 100nF 20% 63V POLYESTER | WIMA | MKS2 | — |
| C14 | | NOT USED | | | — |
| C15 | 110042 | 100nF 20% 63V POLYESTER | WIMA | MKS2 | — |
| C16 | 110042 | 100nF 20% 63V POLYESTER | WIMA | MKS2 | — |
| C17 | | NOT USED | | | — |
| C18 | 102121 | 120pF 10% 500V CER DISC | ITT | CD10 | 1 |
| C19 | | NOT USED | | | — |
| C20 | 110042 | 100nF 20% 63V POLYESTER | WIMA | MKS2 | — |
| C21 | 110042 | 100nF 20% 63V POLYESTER | WIMA | MKS2 | — |
| C22 | 120012 | 1µF 10% 160V POLYCARB | ASHCROFT | A2B1025B | 1 |
| C23 | 102102 | 1nF 10% 500V CER DISC | ITT | CD10 | 2 |

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| DESIGNATOR | DATRON PART No. | DESCRIPTION | PRINCIPAL MANUFACTURER | MANUFACTURER'S PART No. | No. USED Per Assy |
|---|---|---|---|---|---|
| C24 | 110042 | 100nF 20% 63V POLYESTER | WIMA | MKS2 | — |
| C25 | 101103 | 10nF 25% 250V CER DISC | ITT | CD10 | 8 |
| C26 | 102101 | 100pF 10% 500V CER DISC | ITT | CD10 | — |
| C27 | 102680 | 68pF 5% 500V CER DISC | ITT | CD10 | 1 |
| C28 | 150004 | 100µF 20% 6V3 DIP TANT | UNION CARBIDE | K100E6V3 | 1 |
| C29 | 110042 | 100nF 20% 63V POLYESTER | WIMA | MKS2 | — |
| C30 | 110042 | 100nF 20% 63V POLYESTER | WIMA | MKS2 | — |
| C31 | 102150 | 15pF 5% 500V CER DISC | ITT | CD10 | 2 |
| C32 | 102150 | 15pF 5% 500V CER DISC | ITT | CD10 | — |
| C33 | 102478 | 4p7F ±·5pF 500V CER DISC | ITT | CD08 | 2 |
| C34 | 102478 | 4p7F ±·5pF 500V CER DISC | ITT | CD08 | — |
| C35 | 102228 | 2p2F ±·5pF 500V CER DISC | ITT | CD08 | 1 |
| C36 | 110042 | 100nF 20% 63V POLYESTER | WIMA | MKS2 | — |
| C37 | 110042 | 100nF 20% 63V POLYESTER | WIMA | MKS2 | — |
| C38 | 150023 | 33µF 20% 25V DIP TANT | UNION CARBIDE | K33E25 | 1 |
| C39 | | NOT USED | | | — |
| C40 | | NOT USED | | | — |
| C41 | 130065 | 1n8F 1% 63V POLYSTYRENE | SUFLEX | HS1800/1-10/63 | 2 |
| C42 | 102108 | 1pF ±·5pF 500V CER DISC | ITT | CD06 | 1 |
| C43 | 130070 | 13pF ±·5pF 160V POLYSTYRENE | SUFLEX | HS13/1-7/160 | 2 |
| C44 | 140058-1 | 150pF X2 MATCHED SET | DATRON | SEE DRG | 1 |
| C45 | 110042 | 100nF 20% 63V POLYESTER | WIMA | MKS2 | — |
| C46 | 130070 | 13pF ± 1pF 160V POLYSTYRENE | SUFLEX | HS13/1-7/160 | — |

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TITLE 1061A 1062 AC PCB ASSY

DRAWING NUMBER 400552

SHEET 11 OF 20

| DESIGNATOR | DATRON PART No. | DESCRIPTION | PRINCIPAL MANUFACTURER | MANUFACTURER'S PART No. | No. USED Per Assy. |
|---|---|---|---|---|---|
| C47 | 102278 | 2p7F ± ·5pF 500V CER DISC | ITT | CD10 | 1 |
| C48 | 110035 | 220nF 20% 63V POLYESTER | WIMA | MKS2 | 2 |
| C49 | 110035 | 220nF 20% 63V POLYESTER | WIMA | MKS2 | — |
| C50 | 102100 | 10pF 5% 500V CER DISC | ITT | CD10 | 1 |
| C51 | 101103 | 10nF 25% 250V CER DISC | ITT | CD10 | — |
| C52 | 110042 | 100nF 20% 63V POLYESTER | WIMA | MKS2 | — |
| C53 | 110042 | 100nF 20% 63V POLYESTER | WIMA | MKS2 | — |
| C54 | 110040 | 33nF 20% 63V POLYESTER | WIMA | MKS2 | 1 |
| C55 | | NOT USED | | | — |
| C56 | 110042 | 100nF 20% 63V POLYESTER | WIMA | MKS2 | — |
| C57 | 130065 | 1n8F 1% 63 V POLYSTYRENE | SUFLEX | HS1800/1-10/63 | — |
| C58 | 110042 | 100nF 20% 63V POLYESTER | WIMA | MKS2 | — |
| C59 | 102470 | 47pF 5% 500V CER DISC | ITT | CD10 | 2 |
| C60 | 102102 | 1nF 10% 500V CER DISC | ITT | CD10 | — |
| C61 | 110042 | 100nF 20% 63V POLYESTER | WIMA | MKS2 | — |
| C62 | 140058-1 | 150pF x2 MATCHED SET | DATRON | SEE DRG | — |
| C63 | 101103 | 10nF 25% 250V CER DISC | ITT | CD10 | — |
| C64 | 150020 | 10µF 20% 25V DIP TANT | UNION CARBIDE | K10E25 | — |
| C65 | 140057-1 | 10nF ½% 125V SILV. MICA | DATRON | SEE DRG | 1 |
| C66 | 110042 | 100nF 20% 63V POLYESTER | WIMA | MKS2 | — |
| C67 | 140056-1 | 1nF ½% 300V GLASS | DATRON | SEE DRG | 1 |
| C68 | 110026 | 6n8F 20% 100V POLYESTER | WIMA | FKS2 | 1 |
| C69 | 140055-1 | 91pF ½% 500V GLASS | DATRON | SEE DRG | 1 |

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TITLE 1061A 1062 AC PCB ASSY

DRAWING NUMBER 400552

SHEET 12 OF 20

| DESIGNATOR | DATRON PART No. | DESCRIPTION | PRINCIPAL MANUFACTURER | MANUFACTURER'S PART No. | No. USED Per Assy. |
|---|---|---|---|---|---|
| C70 | 130025 | 22pF ±1pF 160V POLYSTYRENE | SUFLEX | HS | 1 |
| C71 | 102330 | 33pF 5% 500V CER DISC | ITT | CD10 | 1 |
| C72 | 110042 | 100nF 20% 63V POLYESTER | WIMA | MKS2 | — |
| C73 | 150001 | 22µF 20% 16V DIP TANT | UNION CARBIDE | K22E16 | 1 |
| C74 | 120010 | 1µ5F 10% 160V POLYCARB | ASHCROFT | A2B1525B | 3 |
| C75 | 120010 | 1µ5F 10% 160V POLYCARB | ASHCROFT | A2B1525B | — |
| C76 | 120010 | 1µ5F 10% 160 V POLYCARB | ASHCROFT | A2B1525B | — |
| C77 | 120001 | 220nF 10% 1kV POLYCARB | SUFLEX | SN | 1 |
| C78 | 140031 | 13pF 5% 500V GLASS | ELECTROSIL | CYFM10 | 1 |
| C79 | 140008 | 10pF 1kV TRIMMER | JACKSON | TETFER VPC | 3 |
| C80 | 102338 | 3p3F ± ·5pF 500V CER DISC | ITT | CD08 | 1 |
| C81 | 140023 | 20pF 2% 500V GLASS | ELECTROSIL | CYFM10 | 2 |
| C82 | 140008 | 10pF 1kV TRIMMER | JACKSON | TETFER VPC | — |
| C83 | 140039 | 15pF 5% 500V GLASS | ELECTROSIL | CYFM10 | 1 |
| C84 | 140008 | 10pF 1kV TRIMMER | JACKSON | TETFER VPC | — |
| C85 | 140023 | 20pF 2% 500V GLASS | ELECTROSIL | CYFM10 | — |
| C86 | 150020 | 10µF 20% 25V DIP TANT | UNION CARBIDE | K10E25 | — |
| C87 | 150020 | 10µF 20% 25V DIP TANT | UNION CARBIDE | K10E25 | — |
| C88 | 150002 | 10µF 20% 16V DIP TANT | UNION CARBIDE | K10E16 | 2 |
| C89 | 150002 | 10µF 20% 16V DIP TANT | UNION CARBIDE | K10E16 | — |
| C90 | 110027 | 3n3F 20% 100V POLYESTER | WIMA | FKS2 | 1 |
| C91 | 150020 | 10µF 20% 25V DIP TANT | UNION CARBIDE | K10E25 | — |
| C92 | 130074 | 6·8pF ±1pF 16V POLYSTYRENE | SUFLEX | HS | 1 |

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DRAWING NUMBER 400552

SHEET 13 OF 20

J.W. 1164

| DESIGNATOR | DATRON PART No. | DESCRIPTION | PRINCIPAL MANUFACTURER | MANUFACTURER'S PART No. | No. USED Per Assy. |
|---|---|---|---|---|---|
| C93 | 150020 | 10μF 20% 25V DIP TANT | UNION CARBIDE | K10E25 | — |
| C94 | 150020 | 10μF 20% 25V DIP TANT | UNION CARBIDE | K10E25 | — |
| C95 | 150016 | 1μF 20% 35V DIP TANT | UNION CARBIDE | K1R0E35 | 1 |
| C96 | 110009 | 1μF 20% 100V POLYESTER | WIMA | MKS | 1 |
| C97 | 101103 | 10nF 25% 250V CER DISC | ITT | CD10 | — |
| C98 | 101103 | 10nF 25% 250V CER DISC | ITT | CD10 | — |
| C99 | 101103 | 10nF 25% 250V CER DISC | ITT | CD10 | — |
| C100 | 101103 | 10nF 25% 250V CER DISC | ITT | CD10 | — |
| C101 | 101103 | 10nF 25% 250V CER DISC | ITT | CD10 | — |
| C102 | 102101 | 100pF 10% 500V CER DISC | ITT | CD10 | — |
| C103 | 102470 | 47pF 5% 500V CER DISC | ITT | CD10 | — |
| C104 | 104017 | 0.5pf 0.1% 500V CER DISC | ITT | CD08 | 1 |

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DRAWING NUMBER 400552 SHEET 14 OF 20

| DESIGNATOR | DATRON PART No. | DESCRIPTION | PRINCIPAL MANUFACTURER | MANUFACTURER'S PART No. | No. USED Per Assy |
|---|---|---|---|---|---|
| D1 | | NOT USED | | | — |
| D2 | 210100 | 10V 400mW ZENER | MULLARD | BZY88C10 | 2 |
| D3 | | NOT USED | | | — |
| D4 | 200008 | 200mA 125V LL Si DIODE | FAIRCHILD | IN458A | 10 |
| D5 | 200001 | 75mA 75V GP Si DIODE | FAIRCHILD | IN4148 | 3 |
| D6 | 200008 | 200mA 125V LL Si DIODE | FAIRCHILD | IN458A | — |
| D7 | 200008 | 200mA 125V LL Si DIODE | FAIRCHILD | IN458A | — |
| D8 | 210120 | 12V 400mW ZENER | MULLARD | BZY88C12 | 3 |
| D9 | 210120 | 12V 400mW ZENER | MULLARD | BZY88C12 | — |
| D10 | | NOT USED | | | — |
| D11 | 210100 | 10V 400mW ZENER | MULLARD | BZY88C10 | — |
| D12 | 220010 | Si HOT CARRIER DIODE | HP | HSCH1001 / IN6263 | 2 |
| D13 | 220010 | Si HOT CARRIER DIODE | HP | HSCH1001 / IN6263 | — |
| D14 | 220036 | DUAL 500pF VARICAP DIODE | MULLARD | BB212 | 1 |
| D15 | 200008 | 200mA 125V LL Si DIODE | FAIRCHILD | IN458A | — |
| D16 | 213011 | 1V5 250mW ZENER | MULLARD | BZV46-1V5 | 1 |
| D17 | 200008 | 200mA 125V LL Si DIODE | FAIRCHILD | IN458A | — |
| D18 | 200008 | 200mA 125V LL Si DIODE | FAIRCHILD | IN458A | — |
| D19 | 210120 | 12V 400mW ZENER | MULLARD | BZY88C12 | — |
| D20 | 210082 | 8V2 400mW ZENER | MULLARD | BZY88C8V2 | 1 |
| D21 | | NOT USED | | | — |
| D22 | 200008 | 200mA 125V LL Si. DIODE | FAIRCHILD | IN458A | — |
| D23 | 200008 | 200mA 125V LL Si DIODE | FAIRCHILD | IN458A | — |

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TITLE 1061A 1062 AC PCB ASSY

DRAWING NUMBER 400552 SHEET 15 OF 20

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| DESIGNATOR | DATRON PART No. | DESCRIPTION | PRINCIPAL MANUFACTURER | MANUFACTURER'S PART No. | No. USED Per Assy. |
|---|---|---|---|---|---|
| D24 | 200008 | 200mA 125V LL.Si. DIODE | FAIRCHILD | IN458A | – |
| D25 | 200008 | 200mA 125V LL.Si. DIODE | FAIRCHILD | IN458A | – |
| D26 | 220020 | FET DIODE 100pA $I_R$ | TELEDYNE | PAD100/INSUL'D CASE | 2 |
| D27 | 200001 | 75mA 75V GP Si DIODE | FAIRCHILD | IN4148 | – |
| D28 | 200001 | 75mA 75V GP Si DIODE | FAIRCHILD | IN4148 | – |
| D29 | 213009 | 15V 5W ZENER | UNITRODE | TVS515 | 1 |
| D30 | | NOT USED | | | – |
| D31 | 220020 | FET DIODE 100pA $I_R$ | TELEDYNE | PAD100/INSUL'D CASE | – |
| | | | | | |
| Q1 | | NOT USED | | | – |
| Q2 | | NOT USED | | | – |
| Q3 | 230027-1 | N-CHAN JFET | TELEDYNE | U3114JF | 2 |
| Q4 | 240013 | Si NPN TRANSISTOR | NATIONAL | BC184C/TO18 | 1 |
| Q5 | 240006 | Si NPN TRANSISTOR | NATIONAL | 2N3904/TO18 | 3 |
| Q6 | 250004 | Si PNP TRANSISTOR | NATIONAL | 2N3906/TO18 | 4 |
| Q7 | 230042 | N-CHAN I LIM 3·0mA | TELEDYNE | J509 | 3 |
| Q8 | 230003 | N-CHAN JFET | TELEDYNE | U1899JF | 4 |
| Q9 | 250011 | Si.PNP TRANSISTOR | NATIONAL | BC327/TO18 | 3 |
| Q10 | | NOT USED | | | – |
| Q11 | 250008 | Si PNP TRANSISTOR | NATIONAL | BC214C/TO18 | 1 |
| Q12 | 250004 | Si PNP TRANSISTOR | NATIONAL | 2N3906/TO18 | – |
| Q13 | 240006 | Si NPN TRANSISTOR | NATIONAL | 2N3904/TO18 | – |
| Q14 | 230042 | N-CHAN I LIM 3·0mA | TELEDYNE | J509 | – |

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| DESIGNATOR | DATRON PART No | DESCRIPTION | PRINCIPAL MANUFACTURER | MANUFACTURER'S PART No. | No. USED Per Assy. |
|---|---|---|---|---|---|
| Q15 | 250011 | Si PNP TRANSISTOR | NATIONAL | BC327/TO18 | – |
| Q16 | 230003 | N-CHAN JFET | TELEDYNE | U1899JF | – |
| Q17 | 250004 | Si PNP TRANSISTOR | NATIONAL | 2N3906/ | – |
| Q18 | 230027-1 | N CHAN JFET | TELEDYNE | U3114JF | – |
| Q19 | | NOT USED | | | – |
| Q20 | 230002 | N-CHAN JFET | TELEDYNE | U1994JF | 1 |
| Q21 | 230056 | N-CHAN JFET | SILICONIX | J212 | 1 |
| Q22 | | NOT USED | | | – |
| Q23 | 230003 | N-CHAN JFET | TELEDYNE | U1899JF | – |
| Q24 | | NOT USED | | | – |
| Q25 | 250004 | Si PNP TRANSISTOR | NATIONAL | 2N3906/TO18 | – |
| Q26 | 240006 | Si NPN TRANSISTOR | NATIONAL | 2N3904/TO18 | – |
| Q27 | 250011 | Si PNP TRANSISTOR | NATIONAL | BC327/TO18 | – |
| Q28 | 230042 | N-CHAN I LIM 3·0mA | TELEDYNE | J509 | – |
| Q29 | 230003 | N-CHAN JFET | TELEDYNE | U1899JF | – |
| Q30 | | NOT USED | | | – |
| Q31 | 230035 | N-CHAN JFET | TELEDYNE | U1897JF | 4 |
| Q32 | 230035 | N-CHAN JFET | TELEDYNE | U1897JF | – |
| Q33 | 230035 | N-CHAN JFET | TELEDYNE | U1897JF | – |
| Q34 | 230035 | N-CHAN JFET | TELEDYNE | U1897JF | – |
| Q35 | 230058 | N-CHAN I LIM 750μA | TELEDYNE | J504 | 1 |
| Q36 | 230031 | N-CHAN DUAL JFET | SILICONIX | U404 | 1 |

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TITLE 1061A 1062 AC PCB ASSY

DRAWING NUMBER 400552 SHEET 17 OF 20

| DESIGNATOR | DATRON PART No. | DESCRIPTION | PRINCIPAL MANUFACTURER | MANUFACTURER'S PART No. | |
|---|---|---|---|---|---|
| M1 | | NOT USED | | | – |
| M2 | 260050 | 412 DUAL BIFET OP AMP | NATIONAL | LF412CN | 2 |
| M3 | 260028 | 1458 DUAL OP AMP | FAIRCHILD | µA1458 CTC | 1 |
| M4 | 260063 | 7650 OP AMP | INTERSIL | ICL7650CTV | 4 |
| M5 | 280015 | QUAD D-TYPE | MOTOROLA | MC14076 BCP | 2 |
| M6 | 280015 | QUAD D-TYPE | MOTOROLA | MC14076 BCP | – |
| M7 | 280011 | DUAL D FLIP FLOP | MOTOROLA | MC14013 BCP | 1 |
| M8 | | NOT USED | | | – |
| M9 | 260063 | 7650 OP AMP | INTERSIL | ICL7650 CTV | |
| M10 | 260063 | 7650 OP AMP | INTERSIL | ICL7650 CTV | |
| M11 | 290026 | RMS KIT | DATRON | SEE DRG | |
| M12 | 290077 | 7 x DARLINGTON DRIVER | SPRAGUE/EXAR | ULN2004A/ | |
| M13 | 260065 | OP27 OP AMP | PMI | OP27 FZ | |
| M14 | 260027 | 714 OP AMP | FAIRCHILD | µA714 HC | |
| M15 | 280116 | DUAL 4 CHAN AN MUX | SILICONIX | DG509 CJ | |
| M16 | 260050 | 412 DUAL BIFET OP AMP | NATIONAL | LF412CN | |
| M17 | 280116 | DUAL 4 CHAN AN MUX | SILICONIX | DG509 CJ | |
| M18 | | NOT USED | | | |
| M19 | 290066 | FREQ. SENSITIVE SWITCH | CONSUMER MICROCIRCUITS | FX301L | |
| M20 | 260027 | 714 OP AMP | FAIRCHILD | µA714 HC | |
| M21 | 260063 | 7650 OP AMP | INTERSIL | ICL7650 CTV | |
| M22 | 260047 | 2625 OP AMP | HARRIS | HA32625-5 | |

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TITLE 1061A 1062 AC PCB ASS'Y

DRAWING NUMBER 400552 SHEET 1 OF 2

| DESIGNATOR | DATRON PART No. | DESCRIPTION | PRINCIPAL MANUFACTURER | MANUFACTURER'S PART No. |
|---|---|---|---|---|
| RL1 | 330012-2 | REED RELAY 1A GUARDED | HAMLIN | HE721A5134 |
| RL2 | 330018-1 | RELAY 2P2W 7V HOLD-IN | AMF | SEE DRG |
| RL3 | 330018-1 | RELAY 2P2W 7V HOLD-IN | AMF | SEE DRG |
| RL4 | 330012-2 | REED RELAY 1A GUARDED | HAMLIN | HE721A5134 |
| RL5 | 330012-2 | REED RELAY 1A GUARDED | HAMLIN | HE721A5134 |
| RL6 | 330012-2 | REED RELAY 1A GUARDED | HAMLIN | HE721A5134 |
| | 450388-1 | GUARD SHIELD | | |
| | 400379/5 | WIRE/TERMINAL ASSY | | |
| | 410217-4 | PCB | | |
| | 459112-2 | RELAY BRACKET | | |
| | 540002 | 22 SWG BTC WIRE | | |
| | 512999 | 7/.2 PTFE INSUL. (WHITE) WIRE | | |
| J1 | 571095/C | 16 WAY AP/3M RIBBON CABLE | | |
| | 590001 | SLEEVE MAX CABLE ⌀ 3.0 | HELLERMANN ELECTRIC | H15 x 20mm BLACK |
| | 590004 | SLEEVE – PTFE | HELLERMANN ELECTRIC | FE10 |
| | | | | |
| | 605059 | 8 WAY D.I.L. SOCKET | | |
| | 602001 | FSV TERMINAL | MOLEX | 02-04-1875 |
| | 602004 | BREAKAWAY TERM! STRIP | MOLEX | 05-30-0001 |
| J3 | 605052 | 8 WAY POLARISED SOCKET | MOLEX | (22-01-2085) 6471-8-1 |
| | 605060 | 14 PIN DIL SOCKET | ASTRALUX | ICL143-S3T |
| | 605061 | 16 PIN DIL SOCKET | ASTRALUX | ICL163-S6T |
| | 605057 | CRIMP TERMINAL | MOLEX | 4809-GL |

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TITLE 1061A 1062 AC PCB ASS'Y

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| DESIGNATOR | DATRON PART No | DESCRIPTION | PRINCIPAL MANUFACTURER | MANUFACTURER'S PART No | No. USED Per Assy |
|---|---|---|---|---|---|
| | 611007 | M3 x 6mm POZI CSK STEEL | ZN. PL. | | 3 |
| | 611016 | M3 x 8mm POZI PAN STEEL | ZN. PL. | | 5 |
| | 612021 | M3 x 16mm SPACER | HARWIN | R6377-02 | 3 |
| | 613005 | M3 INT. SHAKEPROOF | | | 2 |
| | 613014 | M2·5 INT. SHAKEPROOF | | | 2 |
| | 615002 | M3 FULL NUT STEEL ZN. PL. | | | 2 |
| | 615005 | 3-48 UNC FULL NUT STEEL | ZN. PL. | | 2 |
| | 617010 | NYLATCH PLUNGER 3/16" | HARTWELL CORP | HN3P-32-4-1 | 5 |
| | 617011 | NYLATCH GROMMET 3/16" | HARTWELL CORP | HN3G-32-1 | 5 |
| | 620003 | SOLDER PIN | HARWIN | H2105 A01 | 2 |
| | 620005 | CLOVERLEAF PTFE INSUL. | SEALECTRO | FTE15P59 | 9 |
| | 620007 | TEST POINT TERMINAL | MICROVAR | TYPE C30 | 12 |
| | 630107 | BRASS STRIP 15·5 x ·38mm | RIGHTON | CZ108 ½H | 220mm |
| | 613029 | M3 CRINKLE WASHER S.S | | | 3 |
| | 620001 | CLOVERLEAF. PTFE INSUL. | SEALECTRO | FTE 12 P59 | 5 |
| | 620008 | PTFE BUSH | SEALECTRO | 119-0034 | 2 |
| | 630024 | STEATITE BEAD 16 SWG | PARK ROYAL PORCELAIN | Nº 2 | 4 |
| | | | | | |
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TITLE 1061A 1062 AC PCB ASSY

DRAWING NUMBER 400552

SHEET 20 OF 20

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| DESIGNATOR | DATRON PART No | DESCRIPTION | PRINCIPAL MANUFACTURER | MANUFACTURERS PART No | No. REQD PER Ass. |
|---|---|---|---|---|---|
| | 400427-10 | IEEE 488 OPTION PC.B. ASSY | DATRON | | 1 |
| | 400429-3 | SOCKET/ CABLE ASSY | DATRON | | 1 |
| | 400346-2 | ADDRESS SWITCH PCB. ASSY. | DATRON | | 1 |
| | 400400-2 | EXTERNAL TRIGGER ASSY. | DATRON | | 1 |
| | | | | | |
| | 450169-3 | STUD MOUNT STANDOFF | SEE DRG | | 2 |
| | 450225-2 | IEEE ADAPTOR PLATE | SEE DRG | | 1 |
| | | | | | |
| | 611004 | M3×6mm POZI-PAN SCREW | ZINC PL. | | 3 |
| | 611016 | M3×8mm POZI-PAN SCREW | ZINC PL. | | 2 |
| | 613005 | M3 INT. SHAKEPROOF WASHER | | | 2 |
| | 613020 | M4 FLAT WASHER | | | 2 |
| | 613021 | M4 INT. SHAKEPROOF WASHER | | | 2 |
| | 613029 | M3 CRINKLE WASHER | | | 3 |
| | 615011 | M4 FULL HEX NUT STEEL | | | 2 |
| | 630191 | RIBBON CABLE CLIP | RICHCO | DFCC-2 | 1 |
| | | | | | |
| M3 | 290070-20 | 4k × 8 EPROM | DATRON | | 1 |

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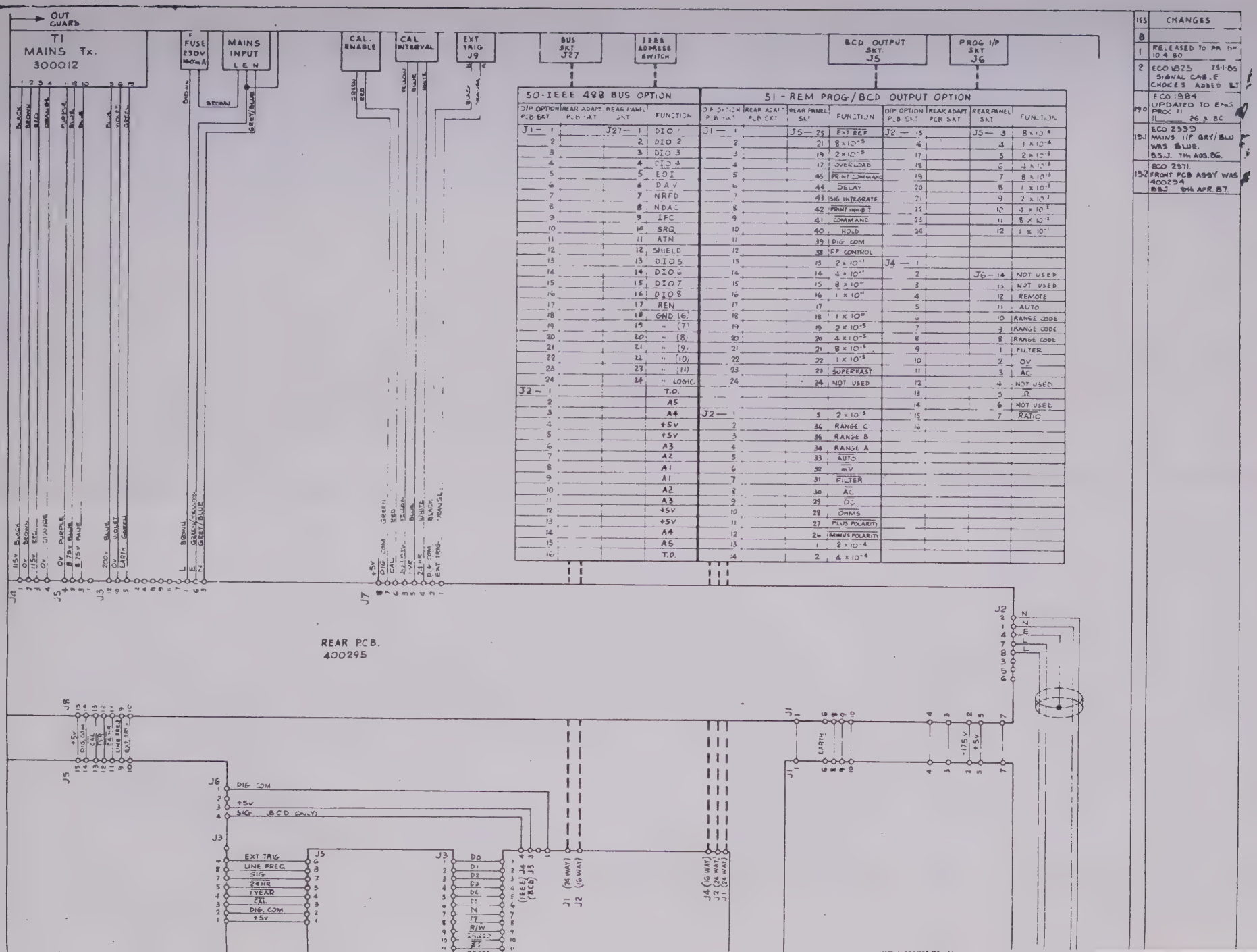
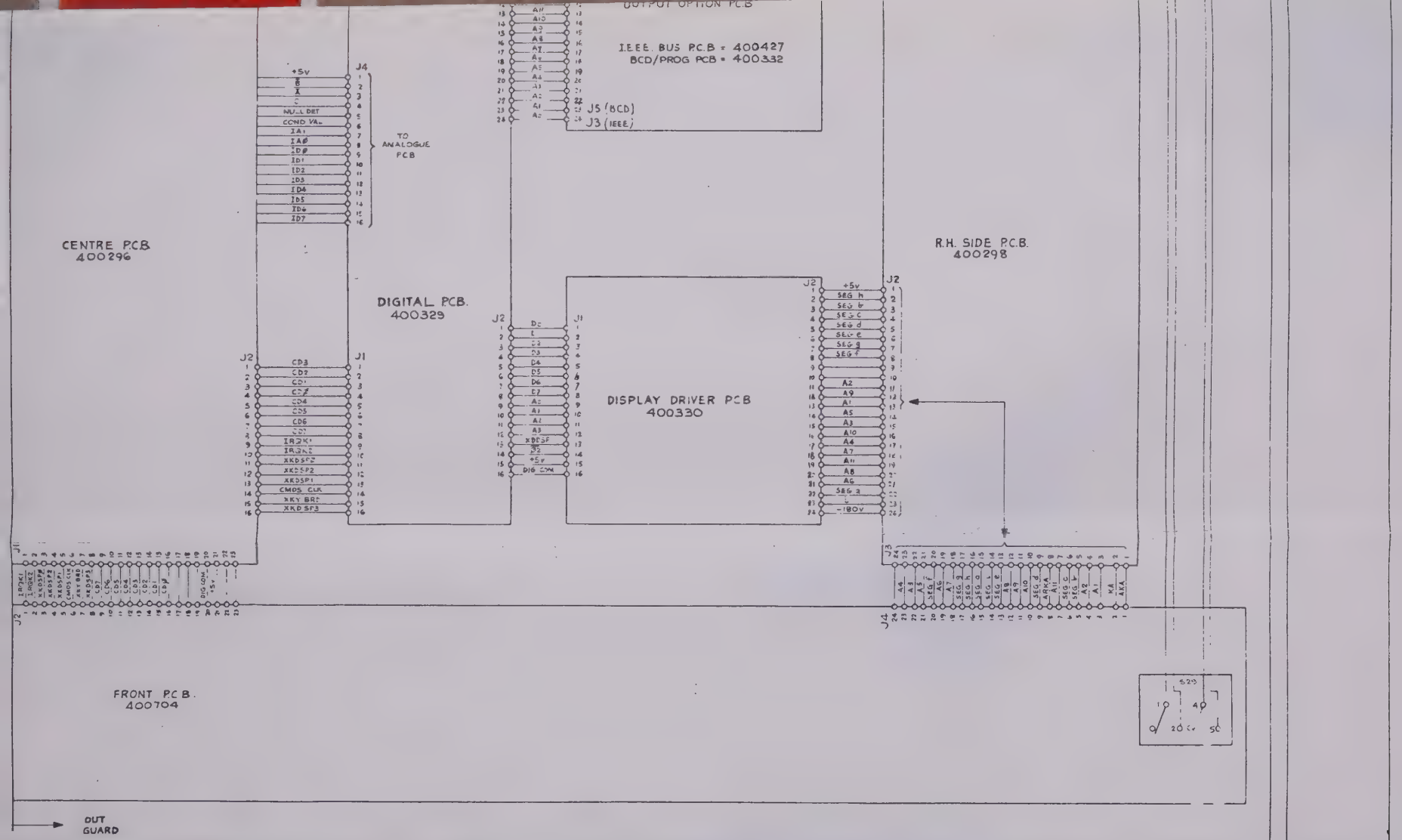
TITLE 1061 IEEE 488 OPTION
DRAWING NUMBER 440083
SHEET 1 OF 1



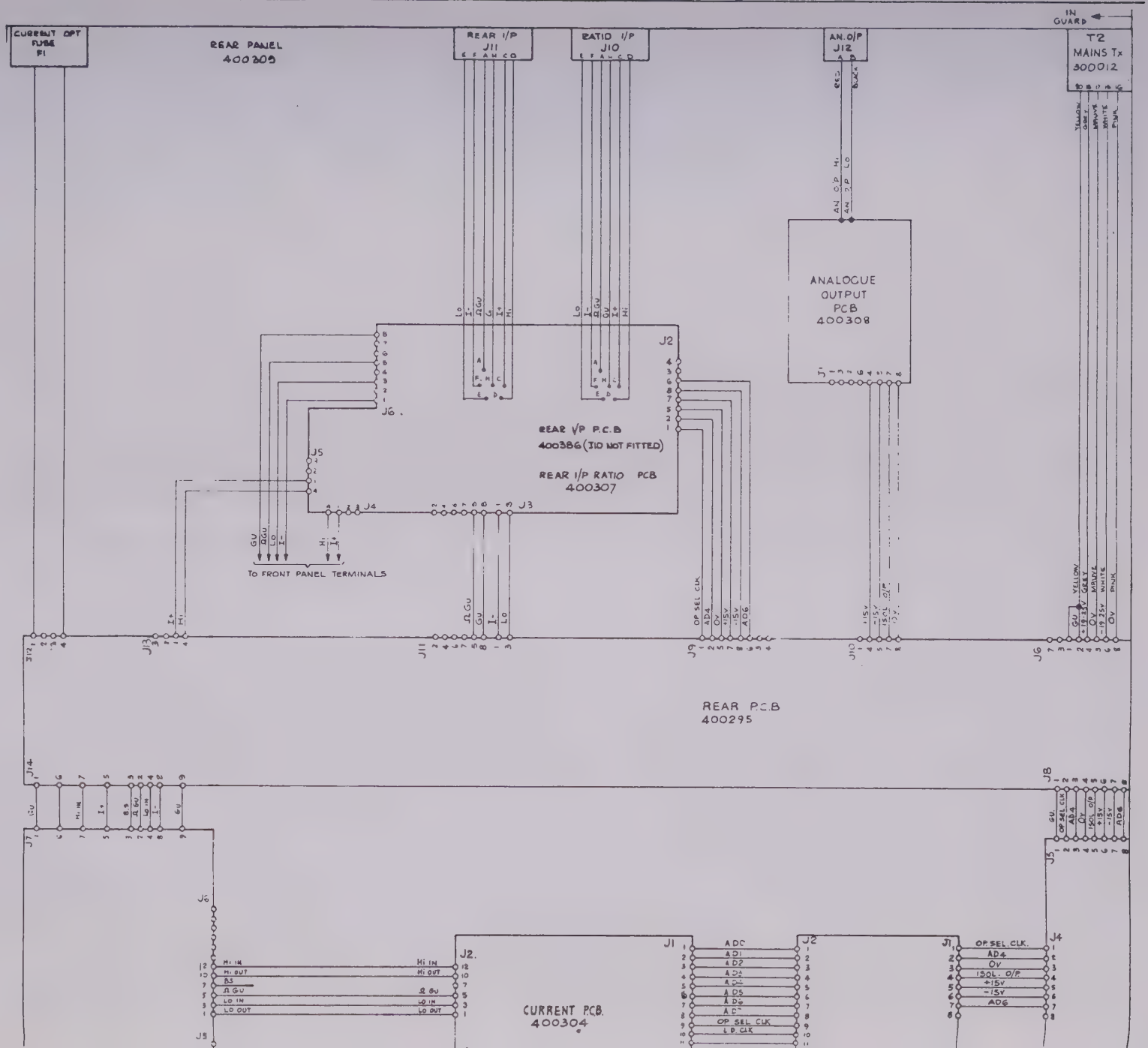

| ISS | CHANGES |
|---|---|
| B | |
| 1 | RELEASED TO PR DM 10 4 80 |
| 2 | ECO 1823 25-1-85 SIGNAL CAB. E CHOKES ADDED EJ |
| 190 | ECO 1984 UPDATED TO ENG PROC 11 11 26 3 86 |
| 191 | ECO 2339 MAINS I/P GRY/BLU WAS BLUE. BSJ. 7TH AUG. 86. |
| 192 | ECO 2371. FRONT PCB ASSY WAS 400294 BSJ 9TH APR 87. |

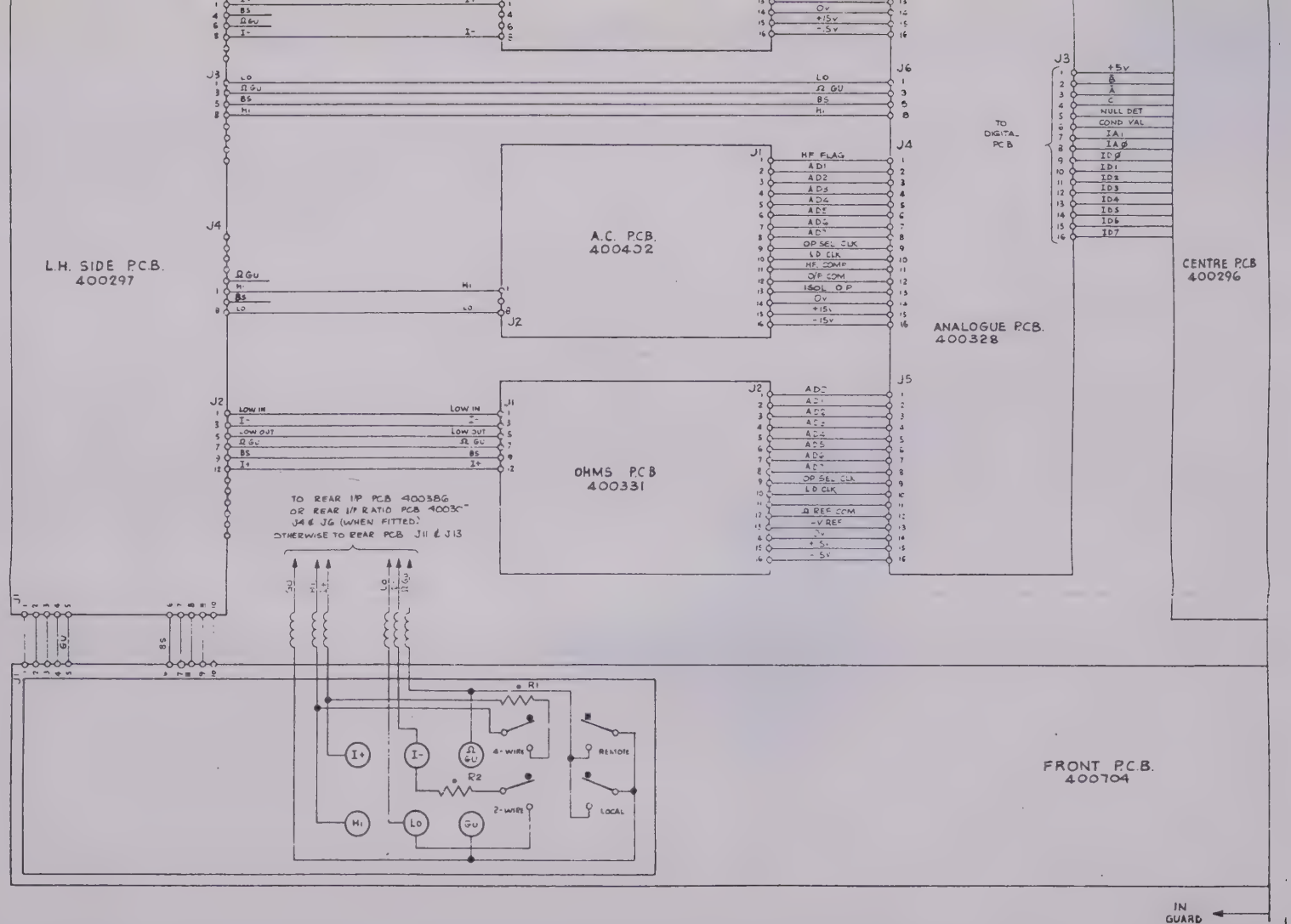



| DRAWN | CHECKED | DIMENSIONS IN | TOLERANCES | MATERIAL | datron ELECTRONICS LTD. NORWICH. | DRAWING SIZE |
|---|---|---|---|---|---|---|
| IL | MA | | INCH DIMENSIONS: DECIMAL TO 3 PLACES ± .005; DECIMAL TO 2 PLACES ± .01; FRACTIONAL ± 1/64; ANGULAR ± 1° | | | A1 |
| TRACED | APPROVED | MILLIMETRES | METRIC DIMENSIONS: DECIMAL TO 2 PLACES ± 1mm; DECIMAL TO 1 PLACE ± 2mm; WHOLE DIMENSIONS ± 4mm | FINISH | TITLE: 1061 INTERCONNECTION DIAGRAM | |
| DATE 31 1 79 | DATE | SCALE — NOT TO BE SCALED | UNLESS OTHERWISE STATED | | 430326 | SHEET 1 OF 2 |

430326

| | |
|---|---|
| 189 | CHANGES. |
| 190 | ECO 1984 |
| 191 | ECO 2371 FRONT PCB ASSY WAS 400294. B.J. 9.APR.87. |






datron ELECTRONICS LTD. NORWICH.

DRAWING SIZE A

TITLE 1061 INTERCONNECTION DIAGRAM

DRAWING No. 430326

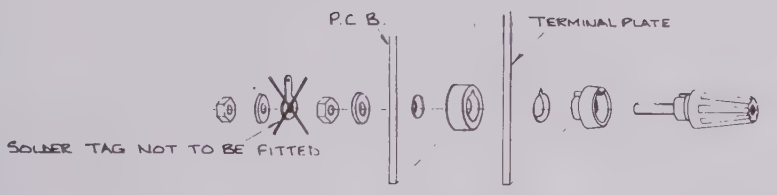
SHEET 2 OF 2

DRAWING No 480294

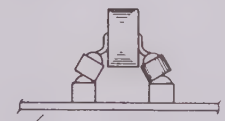
FIRST USED ON

# THIRD ANGLE PROJECTION

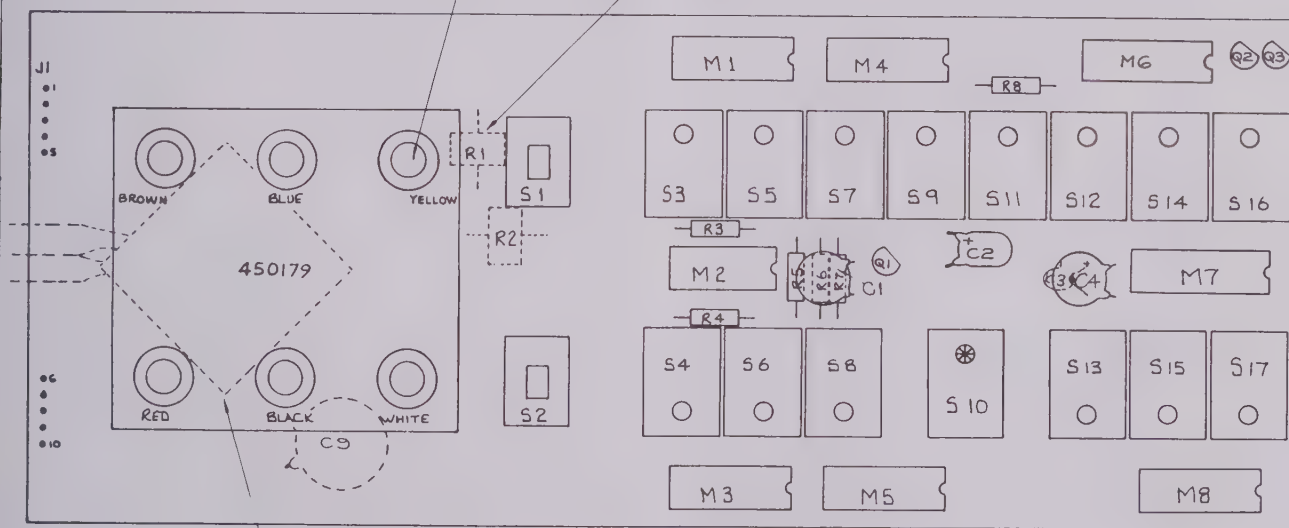
DRAWN IN ACCORDANCE WITH BS 308




ASSEMBLE 6 TERMINALS TO TERMINAL PLATE No 450179 & PCB AS SHOWN ABOVE. TERMINAL COLOURS MUST BE AS INDICATED BELOW.



RESISTORS R1 & R2
2 OFF INSULATING BEADS G30024
ASSEMBLED ON EACH LEG AS SHOWN
RESISTORS TO BE MOUNTED ON THE UNDER SIDE OF BOARD.

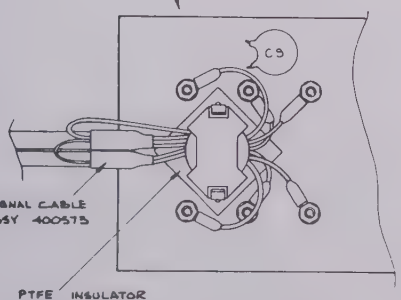



SOLDER SIGNAL CABLE ASSY 400573 TO REVERSE SIDE OF PCB WITH PTFE INSULATOR 450451 BETWEEN PCB & CHOKE.

CONNECT WIRES TO TERMINALS THUS :-

| | | | |
|---|---|---|---|
| WHITE WIRE | TO | WHITE | TERMINAL |
| YELLOW " | " | YELLOW | " |
| GREEN " | " | BLACK | " |
| RED " | " | RED | " |
| VIOLET " | " | BLUE | " |
| BLUE " | " | BROWN | " |

WHEN ASSEMBLY IS FINISHED TAPE CABLES TO PCB USING MASKING TAPE 630099. DO NOT STICK MASKING TAPE OVER DISPLAY. !




| | | | |
|---|---|---|---|
| DRAWN B.J. | CHECKED | DIMENSIONS IN MILLIMETRES | TOLERANCES INCH DIMENSIONS DECIMAL TO 3 PLACES DECIMAL TO 2 PLACES FRACTIONAL METRIC DIMENSIONS DECIMAL TO 2 PLACES DECIMAL TO 1 PLACE WHOLE DIMENSIONS UNLESS OTHERWISE STATED |
| TRACED | APPROVED | SCALE 2:1 NOT TO BE SCALED | |
| DATE 19-4-78 | DATE | | |

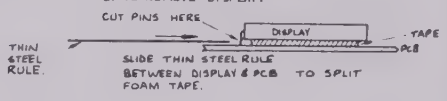
ALL BURRS TO BE REMOVED

## NOTES

IMPORTANT.

1. FIT M1 3 4 5 6 8 9 11 12 & 13 INTO 16 WAY AUGAT SOCKET PART NO 605061.
   FIT M7 & M10 INTO AUGAT SOCKET PART NO. 605062. 18 WAY.
   FIT M2 INTO AUGAT SOCKET PART No. 605060. 14 WAY

2. TO REMOVE DISPLAY:-




| SS | CHANGES |
|---|---|
| C | - |
| D | UPDATED PCB REMOVED 329 |
| 1 | RELEASED TO PRODN 29-9-78 |
| 2 | SKETCH FOR MOLTITE SOCKETS ADDED BJ ECO 978 5 12 78 |
| 3 | ECO 886 WARNING LABEL 4200B0-1 ADDED ECO 918 C3 & C4 WERE 0.33uF 1,500.07 25 JAN 79 W.G.S |
| 4 | ECO 967 LK3 ADDED BJ 11 JUN 80 |
| 5 | ECO 988 26-10-79 UPDATED PCB. BJ + 2 PIECES OF 630029 DELETED SOCKETS:- 602011 & 602012 DISPLAY REMOVAL NOTE |
| 6 | ECO 1111 C9 ADDED IL 21 4 80 |
| 7 | ECO 1213 LK3 DELETED JR 11 6 81 |
| 8 | ECO 1352 MORE TAPE ADDED TO REVERSE OF DISPLAY. JR 1.7.82 |
| 9 | ECO 1472 C10 ADDED COMPLETE WITH SOLDER TAG ENDS IL 2.6.82 |
| 10 | ECO 1662 PCB WAS ISS 4C R13, R14 C11 AND SCREEN P.C.B. ADDED. C9 NOW TRACKED IN. JR 6 8 84 |
| 11 | ECO 1661 C10 & 48A TAG DELETED AP 10.9.84 |

NOTE

NO COMPONENTS TO STAND HIGHER THAN 7·5 mm (EXCEPT SWITCH'S & TERMINALS)

7·5 mm MAX

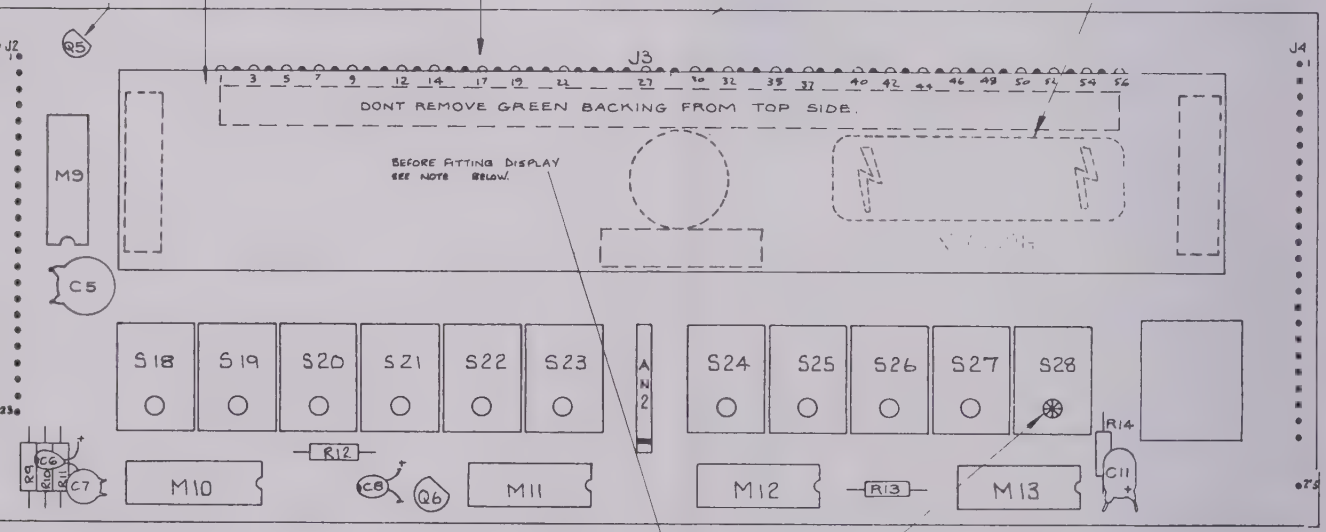
EXCEPT Q4 & Q5 WHICH MUST BE LESS THAN 6·5 mm

THE DISPLAY IS TO HAVE 7 PIECES OF PRESSURE SENSITIVE TAPE 630029 1 PIECE (140 mm LONG) STUCK TO THE P.C.B BELOW THE LINE OF HOLES AND 6 PIECES (25 mm LONG) STUCK TOGETHER IN PAIRS AND STUCK TO THE REVERSE OF DISPLAY IN POSITIONS SHOWN. LINE UP AND PRESS DISPLAY FIRMLY INTO PLACE. THEN SOLDER THE 24 PINS WHICH ARE SHOWN BELOW (THERE ARE ONLY SOLDER PADS FOR THESE PINS).

FIT WARNING LABEL 4200B0-1 IN APPROX POSITION SHOWN ON TRACK SIDE OF P.C.B NEAR MAINS AND DISPLAY CONNECTIONS.

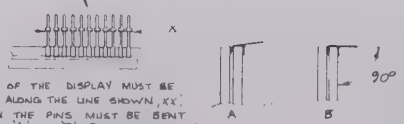
8½ DIGIT DISPLAY 800017

FRONT P.C.B. 410090-7



ALL CAPACITORS TO BE LAID DOWN WHERE POSSIBLE, AS SHOWN. LEADS TO BE BENT AT RIGHT ANGLES THEN INSERTED INTO BOARD, THIS IS TO KEEP CAPACITORS AS LOW AS POSSIBLE.

GREEN L.E.D.s 2 OFF
ALL OTHERS RED.




PINS OF THE DISPLAY MUST BE CUT ALONG THE LINE SHOWN, XX. THEN THE PINS MUST BE BENT FROM 'A' TO 'B' BEFORE INSERTION INTO P.C.B

| SS | CHANGES |
|---|---|
| CONT | |
| 12 | ECO 1815 SCREEN P.C.B REMOVED. JR 10.1.85 |
| 13 | ECO 1823. B.J. SIGNAL CABLE ASSY ADDED. 24th JAN 85 |
| 13.0 | ECO 1984 UPDATED TO ENG. PROC. 11 IL 26.3.86 |
| 14.0 | ECO 2233 ISSUE UPDATE IL 2.6.86 |
| 15.0 | ECO 2400 ISSUE UPDATE IL 30.5.86 |

MATERIAL

FINISH

datron ELECTRONICS LTD. NORWICH.

TITLE

FRONT P.C.B. ASSY. 1061 / 1071 / 1081

DRAWING No 480294.

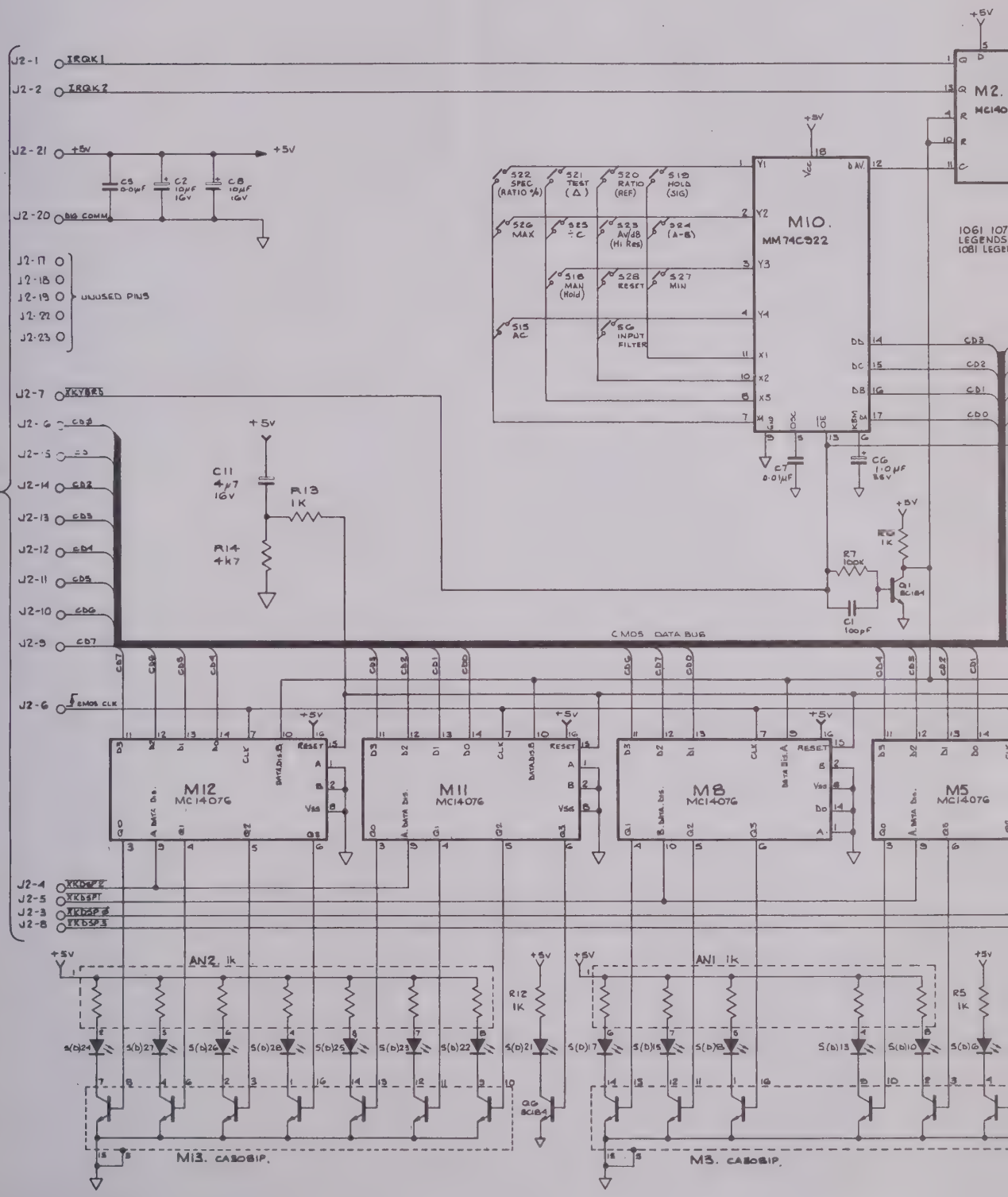
DRAWING SIZE A1

SHEET 1 OF 1

| DRAWING No. |
| --- |
| 430294 |
| FIRST USED ON |
| 1081/71 |

# THIRD ANGLE PROJECTION

DRAWN IN ACCORDANCE WITH BS 308




| DRAWN | CHECKED | DIMENSIONS IN | TOLERANCES | ANGULAR |
| --- | --- | --- | --- | --- |
| B.J. | P.R.H. | MILLIMETRES | INCH DIMENSIONS | |
| TRACED | APPROVED | SCALE | DECIMAL TO 3 PLACES ± | .005 |
| DATE | DATE | NOT TO BE SCALED | DECIMAL TO 2 PLACES ± | .010 |
| 21-3-79. | | | FRACTIONAL ± | 1/64 |
| | | | METRIC DIMENSIONS | |
| | | | DECIMAL TO 2 PLACES ± | 1mm |
| | | | DECIMAL TO 1 PLACE ± | 2mm |
| | | | WHOLE DIMENSIONS ± | 4mm |
| | | | UNLESS OTHERWISE STATED | |

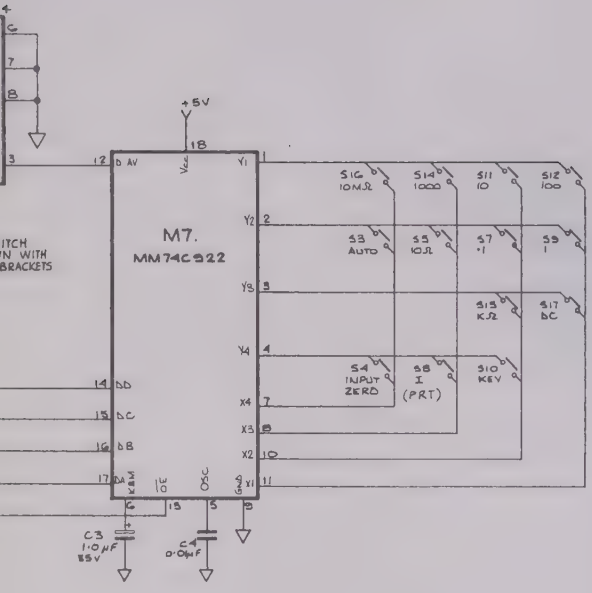
5 | 6 | 7

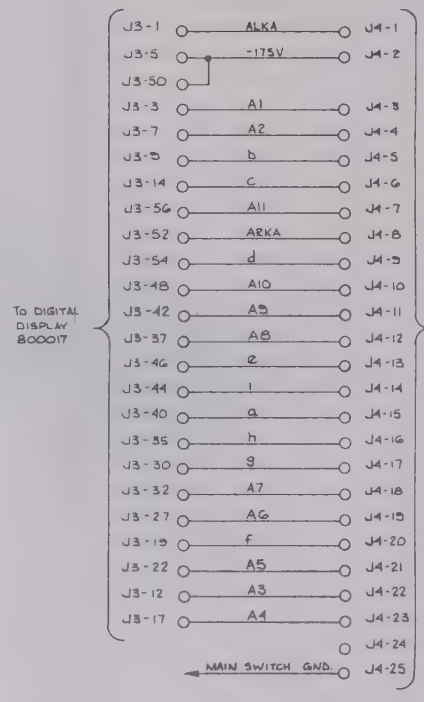
ALL BURRS TO BE REMOVED

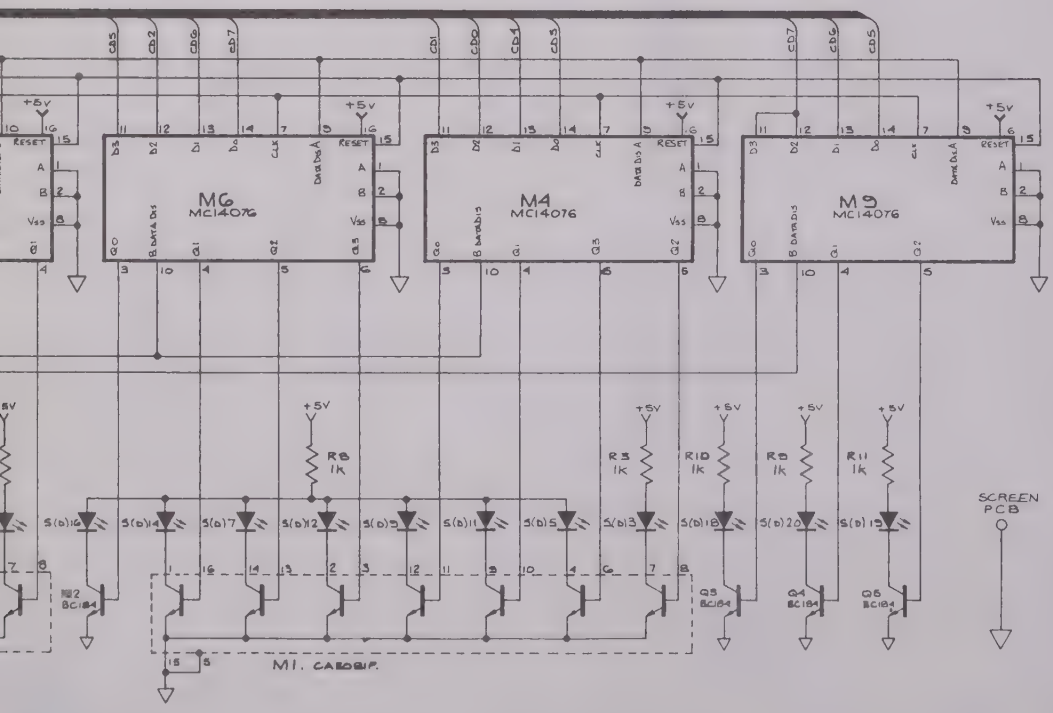
## NOTES

1. SIGNAL CDI ON J2-15, THERE IS A LINK LK2 IN THIS SIGNAL LINE.

| ISS | CHANGES |
|---|---|
| 2 | REDRAWN BJ 21-3-79 |
| 3 | ECO 888 869 CHANGE ON BHTZ BJ 11-6-79 |
| 4 | ECO 1111 SEE SHEET 2 IL 21-4-80 |
| 5 | ECO 1472 C10 ADDED (4n7F) IL 2.6.83 |
| 6 | ECO 1662 R13, R14, C11 AND SCREEN PCB ADDED ON M4, 5, 6, 8, 9, 11 AND M12 PIN 15 WENT TO ▽, AND PIN 16 WAS N.C. M2 PIN 14 WAS N.C. JF 7.8.84 |
| 7 | ECO 1661 SEE SHT 2 AP 10.9.84 |
| 8 | ECO 1823. SEE SHEET 2. BJ. 24th JAN 85. |
| 13.0 | ECO 1984 UPDATED TO ENG PROC.11 IL 26 3 86 |
| 14.0 | ECO 2235 M4-M6 M8 M9 M11 & M12 WERE MC14076 IL 2.8.86 |
| 14.1 | ECO 2332 AN1, AN2, R3-RS & R8-R12 WERE ALL 150R IL 25.7.86 |
| 15.0 | ECO 2400 M4-M6, M8, M9, M11, AND M12 WERE PC74HC173P IL 30.8.86 |



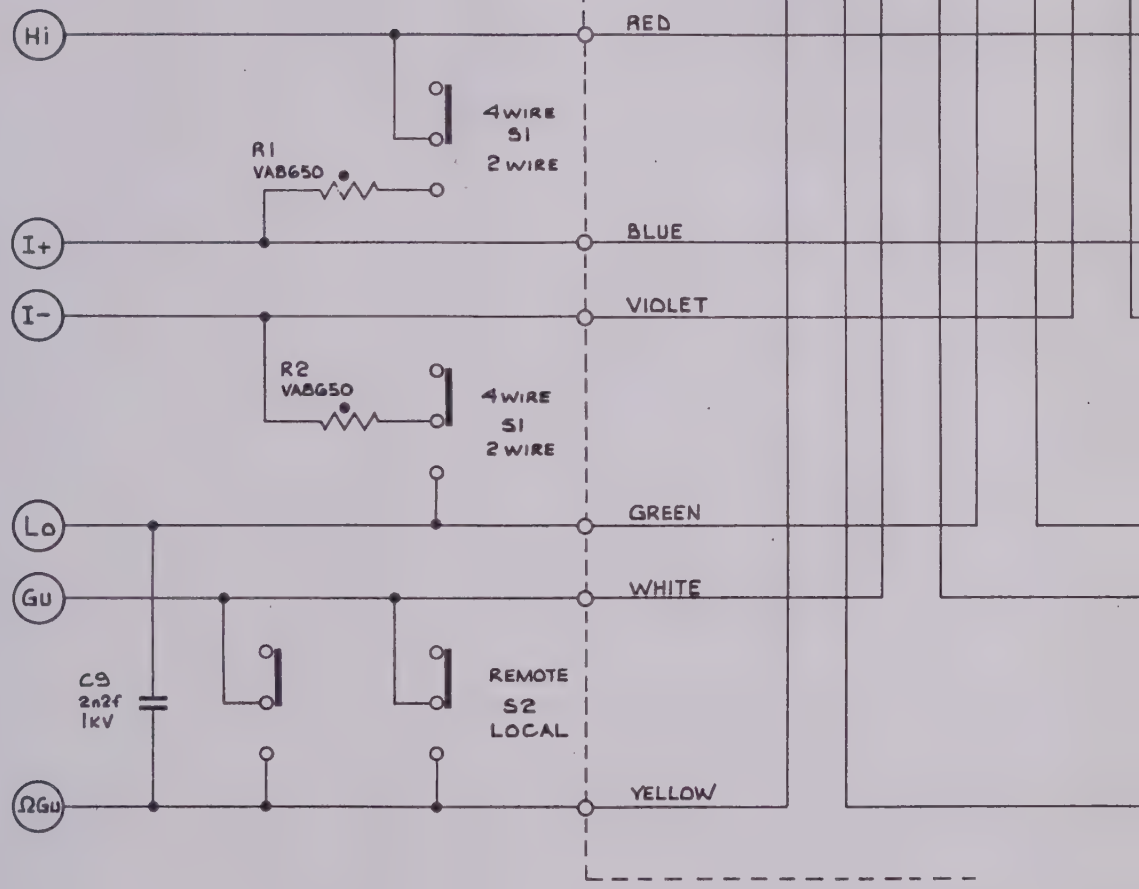

| | | | |
|---|---|---|---|
| MATERIAL —— | datron ELECTRONICS LTD. NORWICH. | | DRAWING SIZE A1 |
| FINISH —— | TITLE FRONT P.C.B. CIRCUIT DIAGRAM 1061/1071/1081 | DRAWING No. 430294 | SHEET 1 OF 2 |

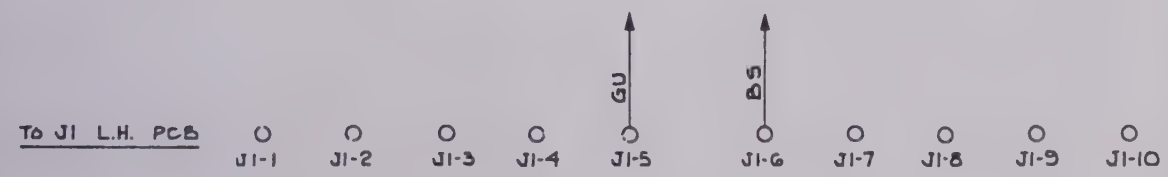
DRAWING No.
430294

FRONT PCB
400294

SIGNAL CABLE ASSY
400573

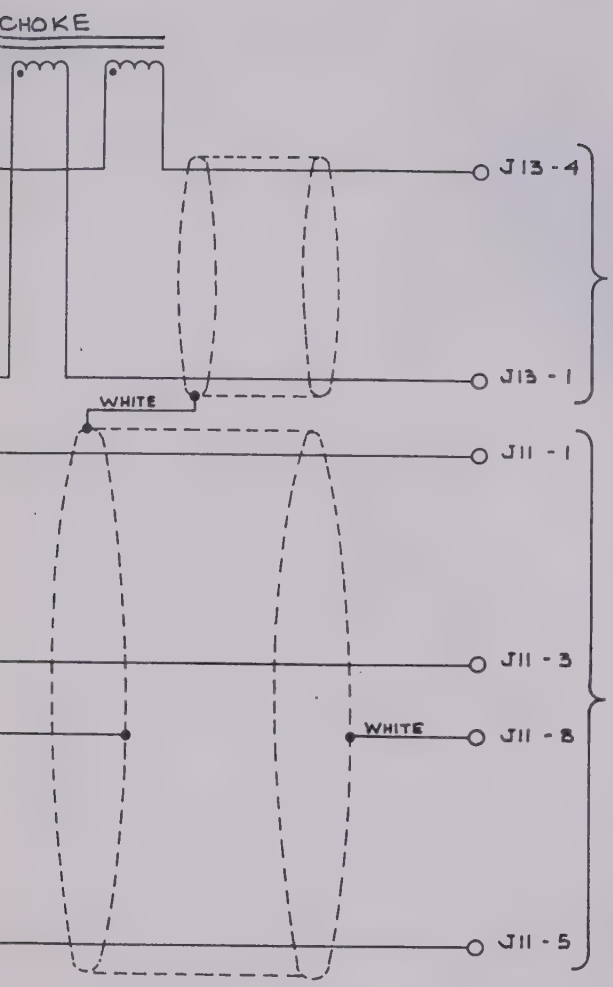
L 1.
INPUT COMMON MODE




| | | | | | |
|---|---|---|---|---|---|
| THIRD ANGLE PROJECTION | DRAWN B.S.JACKSON | DATE 24th JAN 85 | DIMENSIONS IN MILLIMETRES | TOLERANCES<br>DECIMAL TO 2 PLACES ±·1mm<br>DECIMAL TO 1 PLACE ±·2mm<br>WHOLE DIMENSIONS ±·4mm<br>ANGULAR ± ½° | MATERIAL — |
| | CHECKED M.J.D. | DATE 29.1.85 | SCALE — | UNLESS OTHERWISE STATED | FINISH — |
| ALL BURRS TO BE REMOVED | APPR - | DATE 2.4.1.85 | NOT TO BE SCALED | | |

| 4 | 5 | 6 |
|---|---|---|




TO J13 REAR PCB.
(VIA SIGNAL CABLE 400573)
(WHEN REAR INPUT / RATIO IS FITTED, CONNECT TO J4 OF RATIO PCB.)

TO J11 REAR PCB.
(VIA SIGNAL CABLE 400573)
(WHEN REAR INPUT / RATIO IS FITTED, CONNECT TO J6 OF RATIO PCB.)

Notes :-

1. GU (J1-5) SCREENS ALL CIRCUITRY ON THIS SHEET.
2. B.S. SCREENS Hi & I+.
3. ΩG. SCREENS Lo & I-.

| ISS | CHANGES |
|---|---|
| 2 | REDRAWN BJ 21.3.79. |
| 3 | ECO 899 SCREEN FOR Hi & I+ NOW CONNECTED TO GU. VIA WHITE WIRE BJ 11-6-79 |
| 4 | ECO 1111 C9 ADDED. IL 21.4.80 |
| 5 | ECO 1472 C10 ADDED (4n7f) IL 2.6.83. |
| 6 | ECO 1662 SEE SHEET 1. |
| 7 | ECO 1661 C10 DELETED AP. 10.9.84. |
| 8 | ECO 1823 BJ. RE-DRAWN. 25-1-85 CABLE ASSY ADDED TO FRONT PCB ASSY. CHOKE ADDED TO SIGNAL CABLE. |
| 13.0 | ECO 1984 UPDATED TO ENG. PROC. 11 IL 26.3.86 |
| 14.0 | ECO. 2233 ISSUE UPDATE IL 2.6.86 |
| 15.0 | ECO. 2400 ISSUE UPDATE IL 30.9.86 |

datron
INSTRUMENTS
NORWICH
ENGLAND

| | | | |
|---|---|---|---|
| ASSY DRG | 480294 | TITLE | DRAWING No. |
| PARTS LIST | 400294 | FRONT PCB CIRCUIT DIAGRAM | 430294. |
| CIRCUIT DIAGRAM | ——— | | |
| CHECK PROCEDURE | 460294 | | |
| CHECK LIST | 470294 | | SHEET 2 OF 2 |

BA POS 83190

DRAWING No.
480295
FIRST USED ON

# THIRD ANGLE PROJECTION

DRAWN IN ACCORDANCE WITH BS 308

4 OFF. STEEL M3x8
9 OFF. NYLON M3 x8
4 OFF STEEL SHAKEPR
9 OFF NYLON M3 WA
2 OFF STEEL M3 NU
3 OFF NYLON M3 NU

THIS HEATSINK HELD TO PCB BY
STEEL M3 x 8mm SCREWS
STEEL M3 SHAKEPROOF WASHERS

Q1 HELD TO HEATSINK WITH
NYLON M3x8mm SCREW
NYLON M3 WASHER
NYLON M3 NUT

CROP LEADS TO 4mm

HEATSINK 450180

T03 SIL PAD 618009

CRINKLE WASHER 613029 2. OFF

M3x8mm POZI-PAN SCREW 611016 2off

M3 NUT 615002 2.off

INSULATING BUSH 618001 2. off

M3 SOLDER TAG 613009

MICA WASHER 618007

SLEEVE CONNECTIONS 590001

SLEEVE RESISTOR LEAD WITH 590004

WIRE LENGTH 65mm

WIRE LENGTH 35mm.

5mm APPROX.

LEADS MADE FROM 7/·2 PTFE WIRE WHITE 512999

FIT WARNING LABEL 420080-1 IN APPROX POSITIONS SHOWN ON TRACK SIDE OF P.C.B. IN MAINS AREA.

HEATSINK COMPOUND ON BOTH SIDES OF MICA WASHERS ON Q1

4BA SOLDER TAG 613009
7/·2 PTFE WIRE x 30mm 512999
HEATSHRINK x 20mm 590006

BLACK DOTS INDICATE THAT PIN HAS TO BE REMOVED BEFORE INSERTION INTO P.C.B

MOUNT D4 ON STEATITE BEAD 630024 2off

J2 (THESE 5 PINS MOUNTED ON UNDERSIDE OF PCB.)

ALL LINKS USE 22 SWG TIN.CU. WIRE (RATRON PART No. 540002)

FLAT PIN ASSY GOLD (PART No 604033) 17 off.

BACKPLATE INDICATES WHICH WAY THE PIN ASSY FITS INTO THE P.C.B.

LINKS 1,2 & 3 MUST BE SLEEVED USING 590001

FOR 115 V OPERATION
REMOVE LK1, FIT LK2 & LK3

MICA WASHER 618007

M3x8mm NYLON SCREW
M3 NYLON WASHER
M3 NYLON NUT.

R4, R5 & R6 A
CURVE OF C6 &

THE 4
ARE TO
BEFORE

| DRAWN | CHECKED | DIMENSIONS IN | TOLERANCES |
|---|---|---|---|
| B.J. | MH | MILLIMETRES | INCH DIMENSIONS DECIMAL TO 3 PLA DECIMAL TO 2 PLA FRACTIONAL |
| TRACED | APPROVED | SCALE 2:1 NOT TO BE SCALED | METRIC DIMENSIONS DECIMAL TO 2 PLA DECIMAL TO 1 PLA WHOLE DIMENSION UNLESS OTHERWISE STA |
| DATE 26-4-78 | DATE | | |

| 5 | 6 | 7 |
|---|---|---|

. SCREW. 611016.
. SCREW. 611037.
F WASHER. 613005.
ER . 613017.
. 615002.
. 615006.

ALL BURRS TO BE REMOVED

NOTES

| ISS | CHANGES |
|---|---|
| C | |
| D | UPDATED PCB BJ 22-8-78 |
| 1 | RELEASED TO PRODN 29-0-78 |
| 2 | ECO 783. 8-12-78 COMPONENT CHANGES BJ |
| 3 | ECO 816 WARNING LABEL 420080-1 ADDED 25 JAN 79 W.O.S |
| 4 | ECO 876, 882, 900. C16 ADDED J5 NOW GOLD. ISSUE 4 PCB L1, L2 & L3 ADDED. R13 ADDED C8 MOVED R24 R3 CHANGED. 6-6-79 B.J |
| 5 | ECO 931 & 994 PCB WAS 1554. J1.8 & 14 SKTS 602011 DELETED I FUSE LINK WAS SOCKET WIRE & PINS W1 WAS 209013 MICA WASHERS WERE 618005 BJ 31-10-79 |
| 6 | ECO. 1085 1087 2OFF SOLDER PINS 1 1OFF 4-WAY WAFER (J13) DELETED IL 21 4 80 |
| 7 | ECO 1441. R6 WAS ¼W. BJ. 11-2-83 |
| 8 | ECO.1452 M1 WAS MC7805 CT. FIXINGS MODIFIED TO SUIT LM309K DEVICE C8 WAS 10nF CER DISC IL 17.2 83 |

CONT....

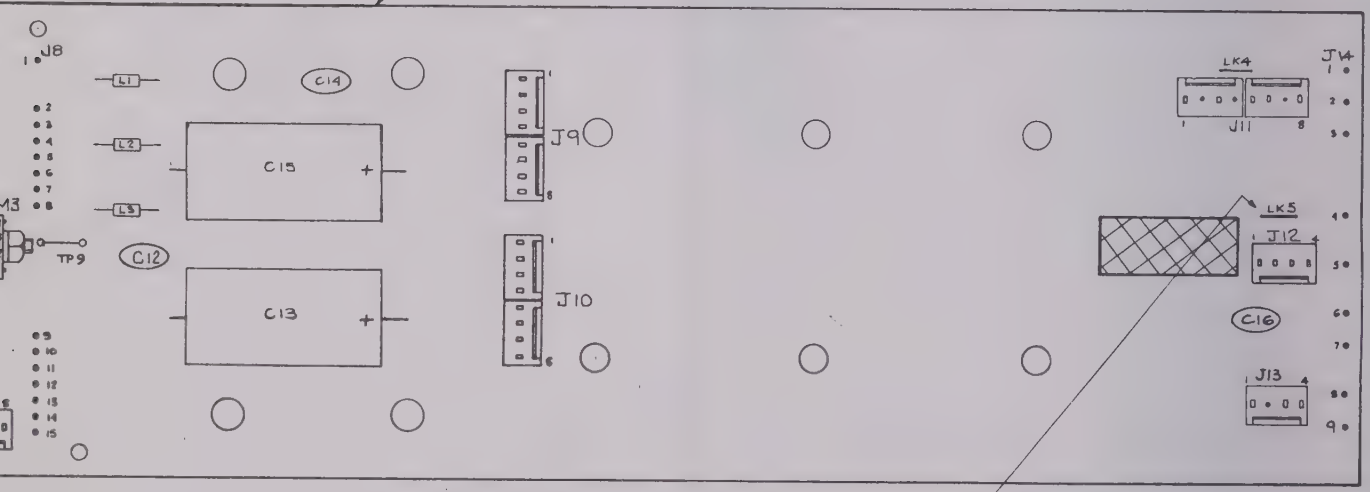
M2 & M3.

THESE 2 HEATSINKS HELD TO PCB WITH NYLON M3 x 8mm SCREWS & NYLON M3 WASHERS

M2 & M3 HELD TO HEAT SINKS WITH STEEL M3 x 8mm SCREWS
STEEL M3 SHAKEPROOF WASHERS
STEEL M3 NUTS

TEST POINT TERMINAL (620007)
8 OFF

REAR PCB
410091-5A




MAKE LK5 AS A TEST POINT LOOP TO FACILITATE EASE OF 'SNIPPING' WHEN NOT REQUIRE.

| NO | CHANGES |
|---|---|
| 9 | R14 C1 DELETED. LK6 ADDED 4BA SOLDER TAG WIRE ASSY ADDED IL 26 83 ECO 1470 |
| 10 | ECO 1517 J3.4.6.7.9.10 WERE TIN IJR 17 8 83 |
| 11 | ECO 1529 D1 AND D2 WERE 200010. PCB WAS ISSUE 5 IJR 15 9 83 |
| 12 | ECO 1688 D4 MOUNTED ON STEATITE BEADS. IL 20 8.84 |
| 13 | ECO. 2170 R14 ADDED. IL 20.3.86 |
| 13.0 | ECO 1984 UPDATED TO ENG. PROC 11 IL 3.4 86 |
| | ECO 2386 GLASS BEADS ADDED. (G30243, 2 OFF) IL 3 2 87 |

POSITIONED UNDER THE
7. (AS SHOWN BELOW)

N.B. GLASS BEAD G30243 FITTED TO EACH LEG OF C8.

C6

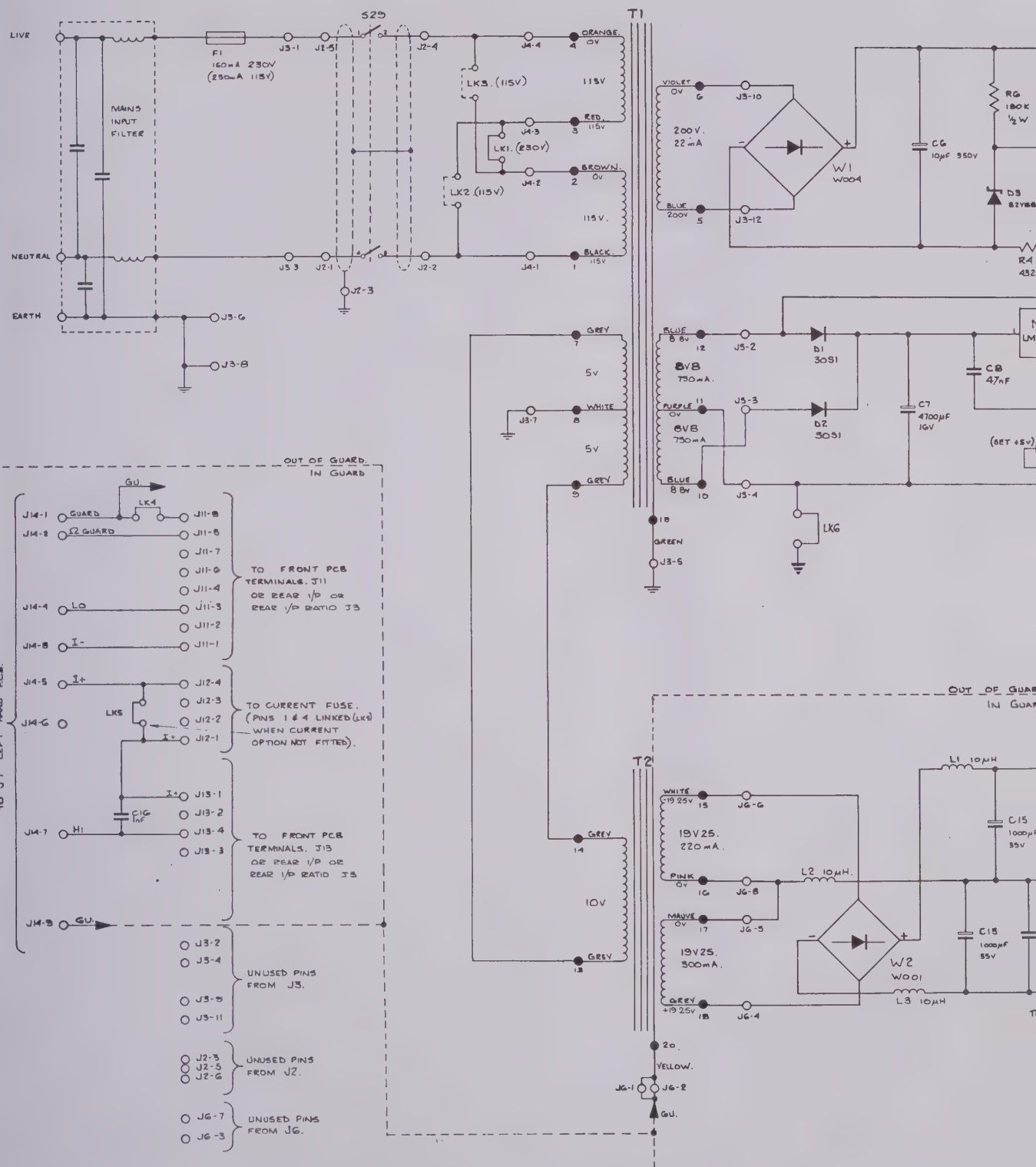
GE CAPACITORS C6, C7, C13 & C15
BEDDED INTO SILICONE RUBBER COMPOUND PART Nº 900004
OLDERING. THIS SHOULD FINISH UP AS ABOVE DRAWING

| ANGULAR | MATERIAL | datron ELECTRONICS LTD. NORWICH. | DRAWING SIZE |
|---|---|---|---|
| ± 005<br>± 010<br>± 1/64<br>± 1mm<br>± 2mm<br>± 4mm | FINISH | TITLE: REAR P.C.B. ASSEMBLY. 1061 / 1071 / 1081 | DRAWING No: 480295 — SHEET: 1 OF 1 |

DRAWING NO. 430295.
FIRST USED ON 1081/71.

# THIRD ANGLE PROJECTION

DRAWN IN ACCORDANCE WITH BS 308



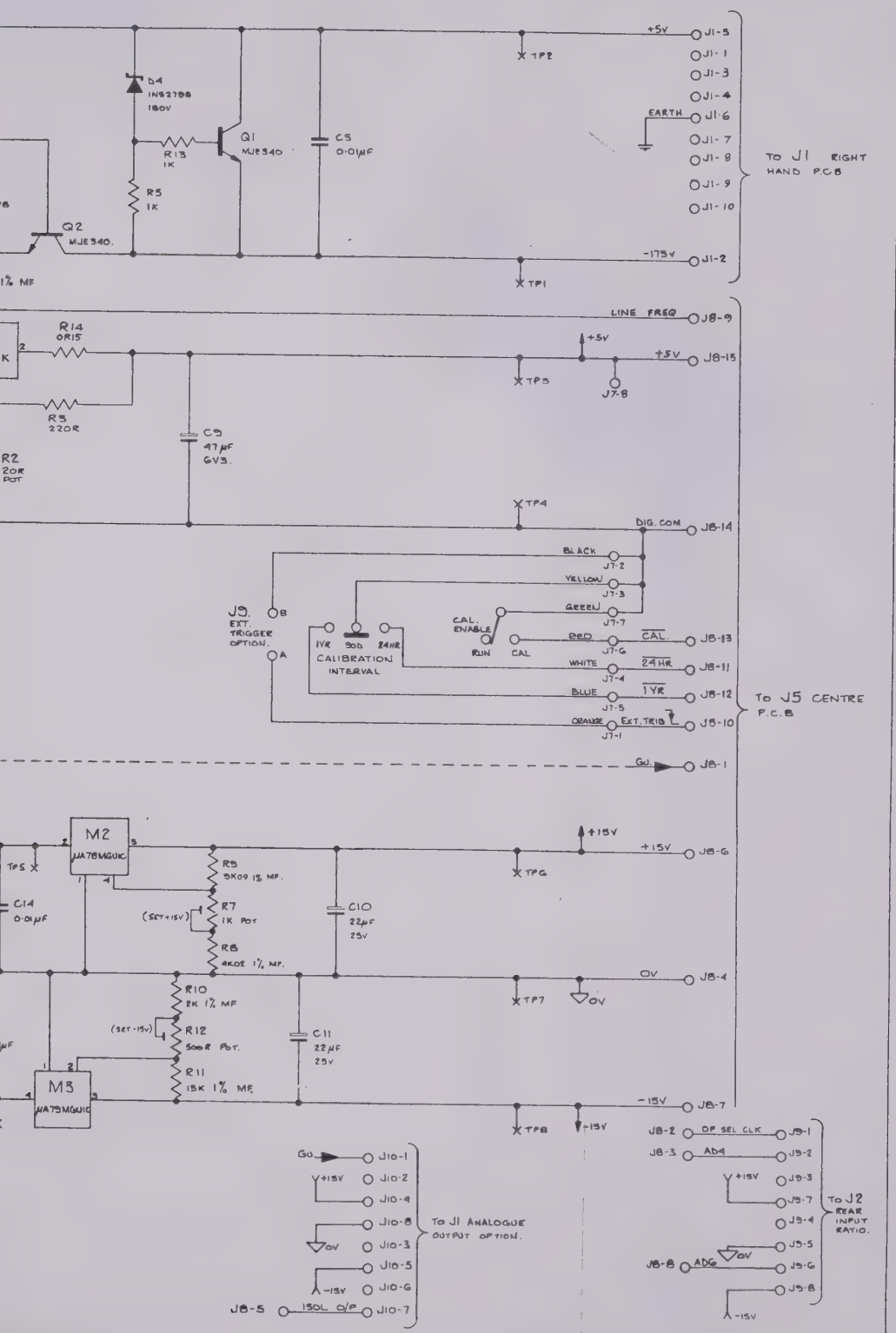

| DRAWN | CHECKED | DIMENSIONS IN | TOLERANCES | ANGULAR | MATE |
|---|---|---|---|---|---|
| B.J. | | MILLIMETRES | INCH DIMENSIONS | | |
| TRACED | APPROVED | SCALE | DECIMAL TO 3 PLACES ± .005 | | |
| | | | DECIMAL TO 2 PLACES ± .010 | | |
| DATE 30-3-79. | DATE | NOT TO BE SCALED | FRACTIONAL ± 1/64 | | FINISH |
| | | | METRIC DIMENSIONS | | |
| | | | DECIMAL TO 2 PLACES ± 1mm | | |
| | | | DECIMAL TO 1 PLACE ± 2mm | | |
| | | | WHOLE DIMENSIONS ± 4mm | | |
| | | | UNLESS OTHERWISE STATED | | |

ALL BURRS TO BE REMOVED

## NOTES

1. T1, T2, MAINS INPUT FILTER, F1, EXT TRIG. OPTION, ERROR SELECT & CAL ENABLE. ARE ALL FITTED ON THE REAR PANEL ASSY 400309, BUT INCLUDED ON THIS CIRCUIT DIAGRAM

| ISS. | CHANGES |
|---|---|
| 2 | RE DRAWN 30-3-79 BJ |
| 3 | ECO 882 & 900 ADDED C18, R18, L1, L2, L3 & LK4. R3 & R2 CHANGED 18-6-79 BJ |
| 4 | ECO 991 & 994 W1 WIRE WOUND (430018) J8 PIN 16 CHANGED. J2 " " " LK5 ADDED. BJ. J8-8 ADDED. 31-10-79 |
| 5 | ECO 1085 J13 PINS 1 TO 4 DELETED IL 21 4 80 |
| 6 | ECO. 1125 FUSE IN NEUTRAL LINE TO J3-3 DELETED. IL 22.5.80 |
| 7 | ECO.1452 M1 WAS MC7805CT C8 WAS 10nF IL 16.2.83 |
| 8 | ECO. 1470 R1 (100k) + C1 (100nF) DELETED. LK6 ADDED IL 1.6.83 |
| 9 | ECO 2170 R14 ADDED IL 20.3.86 |
| 13.0 | ECO 1984 UPDATED TO ENG. PROC. 11 IL 8.4.86 |




datron ELECTRONICS LTD. NORWICH.

DRAWING SIZE A1

TITLE: REAR PCB (INCLUDING REAR PANEL) CIRCUIT DIAGRAM 1061/1071/1081

DRAWING No 430295

SHEET 1 OF 1

| 1 | 2 | 3 | 4 |
|---|---|---|---|

DRAWING No.
480296
FIRST USED ON
1061 /1071

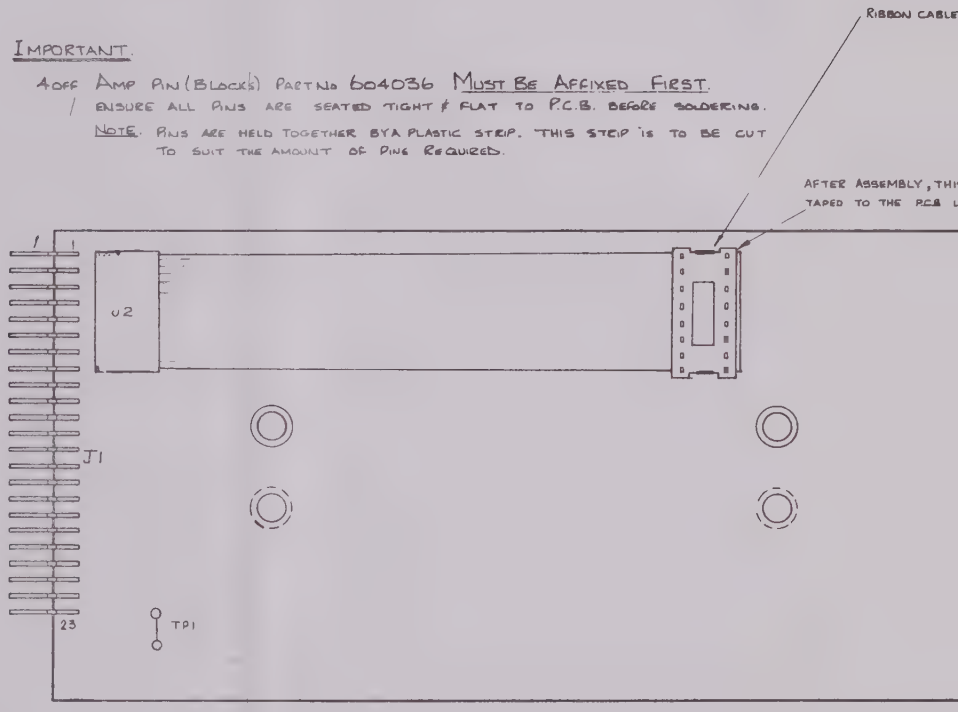
# THIRD ANGLE PROJECTION

DRAWN IN ACCORDANCE WITH BS 308

IMPORTANT.

4 OFF AMP PIN (BLOCKS) PART No 604036 MUST BE AFFIXED FIRST.
/ ENSURE ALL PINS ARE SEATED TIGHT & FLAT TO P.C.B. BEFORE SOLDERING.

NOTE. PINS ARE HELD TOGETHER BY A PLASTIC STRIP. THIS STRIP IS TO BE CUT TO SUIT THE AMOUNT OF PINS REQUIRED.




| DRAWN | CHECKED | DIMENSIONS IN | TOLERANCES |
|---|---|---|---|
| B J. | DG | MILLIMETRES | INCH DIMENSIONS<br>DECIMAL TO 3 PLAC<br>DECIMAL TO 2 PLAC<br>FRACTIONAL |
| TRACED | APPROVED | SCALE | METRIC DIMENSIONS<br>DECIMAL TO 2 PLAC<br>DECIMAL TO 1 PLAC<br>WHOLE DIMENSION |
| DATE 25-4-78 | DATE | 2:1<br>NOT TO BE SCALED | UNLESS OTHERWISE STA |

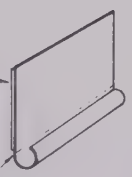
| 5 | 6 | 7 |
|---|---|---|

ALL BURRS TO BE REMOVED

NOTES

| ISS | CHANGES | |
|---|---|---|
| C | | |
| D | D1, D2, D3, R1 & R2 ADDED TO NEW ISS PCB BJ 25-8-78 | MD |
| 1 | RELEASED TO PROD N' 28-9-78 | |
| 2 | ECO 784 RIBBON CABLE MODS. BJ 6-12-78 | MD |
| 3 | ECO 849 PCB MODS BJ 4-5-79 | AC |
| 4 | ECO 867 PCB UPDATE BJ 11-6-79 & ECO 808 572130 CHANGE TO 572100/A 606006 CLIPS REMOVED & ECO 876 J3, 4 & 6 NOW GOLD NOT TIN | MD |
| 5 | ECO 932 26-10-79 PCB WAS 195 9A. BJ PWB OF J5 ADDED PCB CUT OUT INCREASED IN DEPTH. | MD |
| 6 | ECO 1000 RIBBON CABLE ASSY WAS 572100/A IL 18 1 80 | MD |
| 7 | ECO 1102 PCB WAS ISSUE 5 IL 14 4 80 | MD |
| 8 | ECO 1217 RIBBON CABLE WAS 572130/B JR 18 6 81 | MD |
| 8.0 | ECO 1984 UPDATED TO ENG. PROC 11 IL 8 4 86 | MD |
| 8.1 | ECO 2510. D1 & D2 DESIGNATORS SW/OPPED BSJ. 17TH FEB 87. | |

1 OFF CABLE CLIP
(DATRON PART No 630023.)

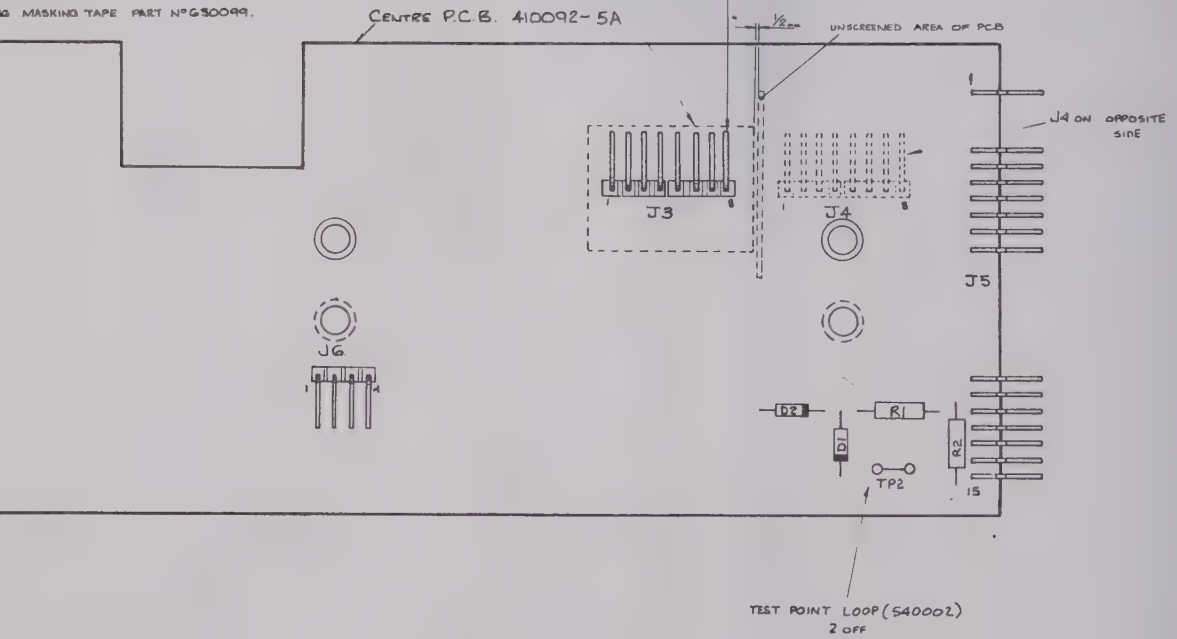


CUT OFF PART SHOWN BY DOTTED LINE.
STICK ON OPPOSITE SIDE OF P.C.B, TO COVER SOLDER JOINTS OF J3 AS SHOWN DOTTED.

SV 572115 /C

5 OFF GOLD RIGHT ANGLED PIN ASSY (PART No. 604035) PLACED TOGETHER AS SHOWN BELOW.

IBBON CABLE IS TO BE
MASKING TAPE PART No G30099.



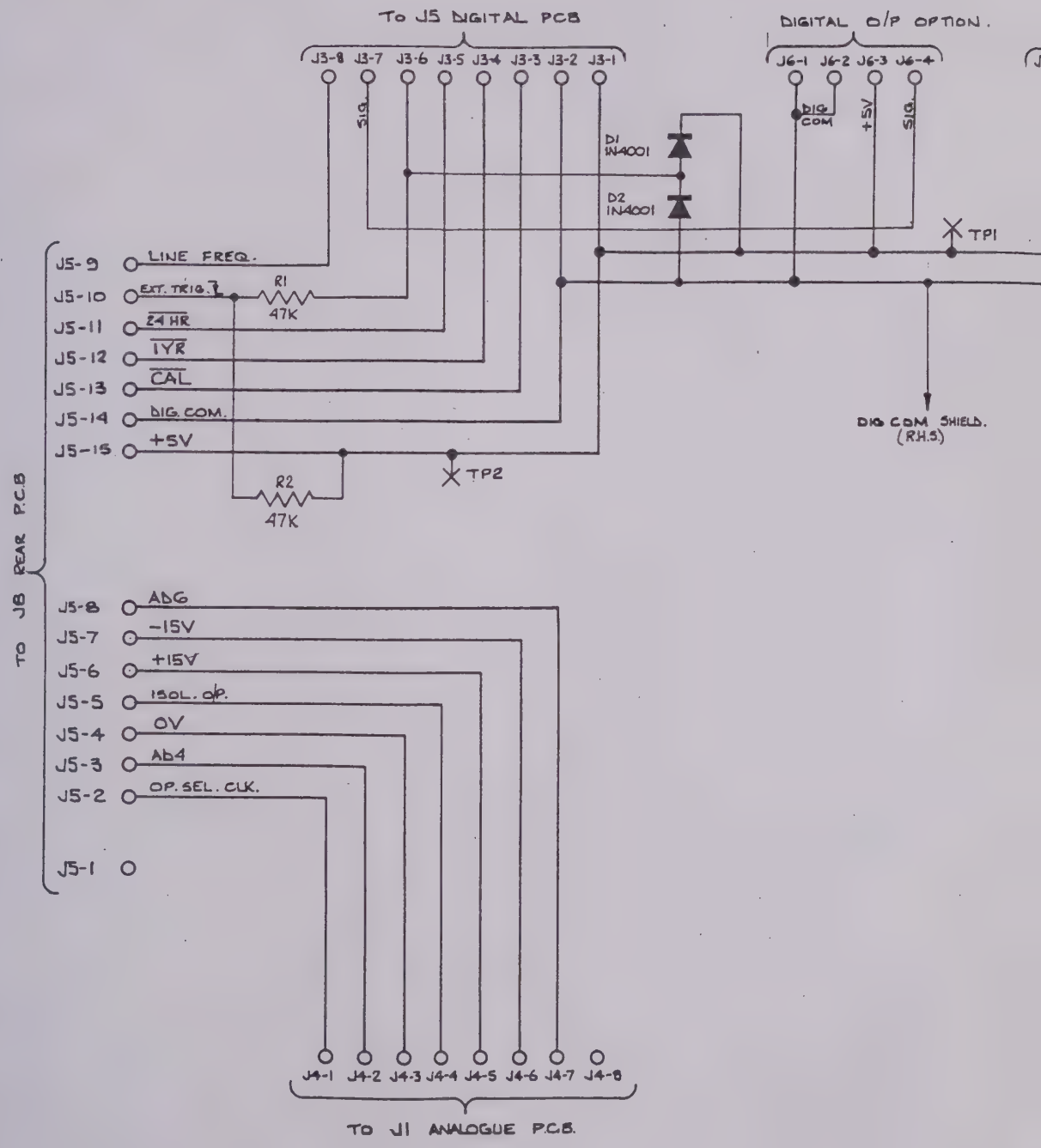

TEST POINT LOOP (S40002)
2 OFF

| | | | |
|---|---|---|---|
| ANGULAR ± ° | MATERIAL | datron ELECTRONICS LTD. NORWICH. | DRAWING SIZE A1 |
| .005 .010 1/64 | FINISH | TITLE CENTRE PCB ASSEMBLY. 1061/1071/1081 | DRAWING No. 480296 |
| 1mm 2mm 4mm | | | SHEET 1 OF 1 |

| DRAWING No. |
| --- |
| 430296 |
| FIRST USED ON |
| 1061 / 1071 |

# THIRD ANGLE PROJECTION

DRAWN IN ACCORDANCE WITH BS 308



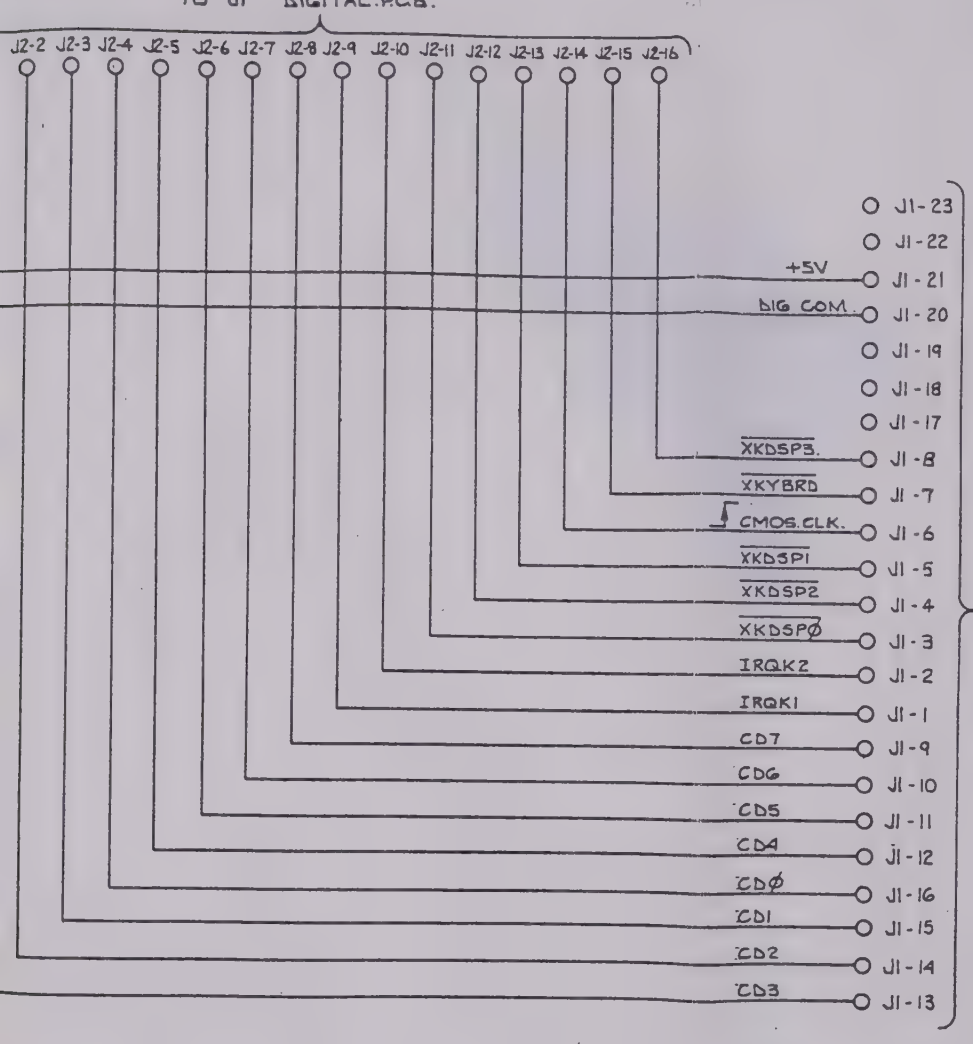

| DRAWN | CHECKED | DIMENSIONS IN | TOLERANCES | ANGULAR ± ½° | MATERIAL |
| --- | --- | --- | --- | --- | --- |
| BJ. | DCB. | | INCH DIMENSIONS | | |
| TRACED | APPROVED | MILLIMETRES | DECIMAL TO 3 PLACES ± .005 | | |
| | | | DECIMAL TO 2 PLACES ± .010 | | |
| | | SCALE | FRACTIONAL ± 1/64 | | FINISH |
| DATE | DATE | | METRIC DIMENSIONS | | |
| 30-5-78 | | NOT TO BE SCALED | DECIMAL TO 2 PLACES ± 1mm | | |
| | | | DECIMAL TO 1 PLACE ± 2mm | | |
| | | | WHOLE DIMENSIONS ± 4mm | | |
| | | | UNLESS OTHERWISE STATED | | |

J W 1162

| 4 | 5 | 6 |
|---|---|---|
| ALL BURRS TO BE REMOVED | | NOTES |

1. "IN GUARD" TRACKS TO BE ON CCT. SIDE (SHT. 2) & "OUT OF GUARD" TRACKS TO BE ON THE COMP. SIDE (SHT. 3) OF P.C.B. WHERE POSSIBLE.

| ISS. | CHANGES |
|---|---|
| D | |
| 1st | RELEASED TO PRODN 29-9-78. |
| 2 | ECO. 848. JG-1 SIG JOINED TO J3-7. B.J. 4-5-79 |
| 3 | ECO 992. B.J. J3-8 ADDED & J3-1 GU. DELETED 29-10-79 |
| 8.0 | ECO 1984 UPDATED TO ENG. PROC. 11 8.4.86 |




datron ELECTRONICS LTD. NORWICH.

DRAWING SIZE A2

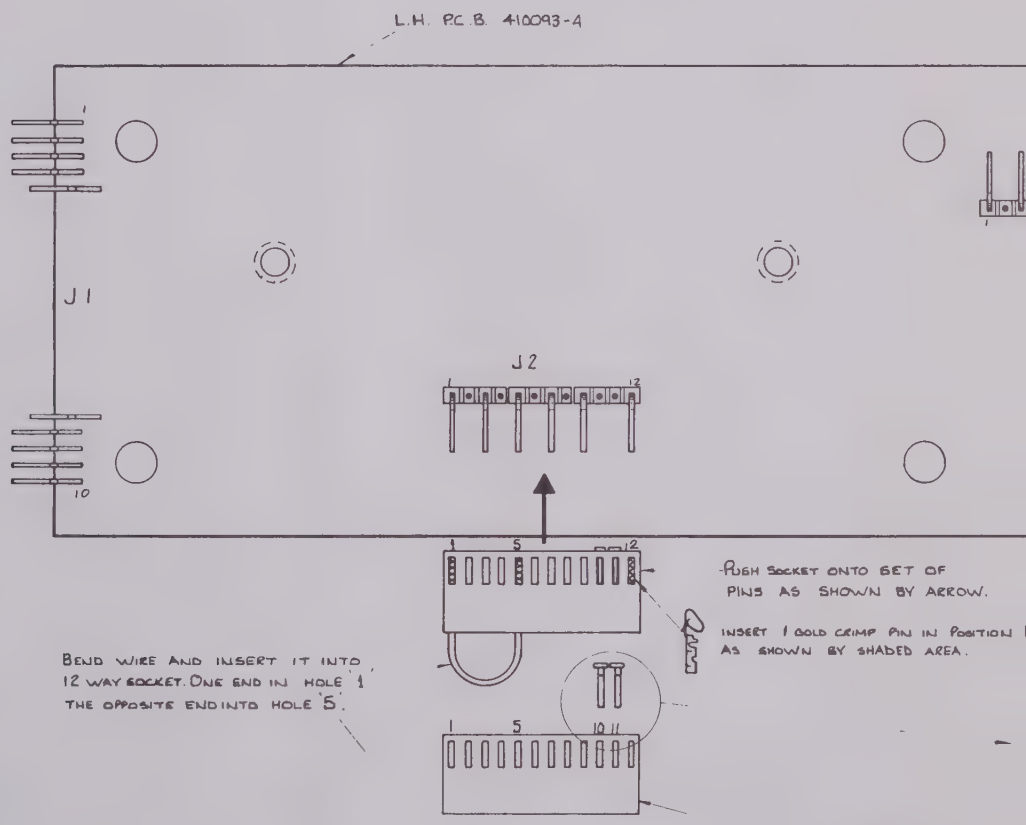
| TITLE | DRAWING No. | SHEET |
|---|---|---|
| CENTRE PCB SCHEMATIC 1061 / 1071 / 1081 | 430296 | 1 OF 1 |

| DRAWING No. |
| --- |
| 480297 |
| FIRST USED ON |
| 1061/71 |

# THIRD ANGLE PROJECTION

DRAWN IN ACCORDANCE WITH BS 308

USE THE GOLD 4 RIGHT ANG
PLACED TOGETHER TO MAK
REMOVE PINS IN PLACES S




PUSH SOCKET ONTO SET OF PINS AS SHOWN BY ARROW.

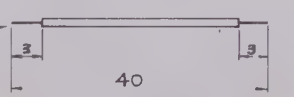
INSERT 1 GOLD CRIMP PIN IN POSITION AS SHOWN BY SHADED AREA.

BEND WIRE AND INSERT IT INTO 12 WAY SOCKET. ONE END IN HOLE 1 THE OPPOSITE END INTO HOLE 5.

2 OFF 12 WAY SOCKET. (PART No 605053).

AFFIX 7 OFF GOLD CRIMP PINS (PART No 605057) ONE ON EACH END OF WIRES, THE 7TH INTO PIN 12 OF SOCKET.

3 OFF. 40mm OF BROWN WIRE, (PART No 510111) AND STRIP 3mm FROM EACH END (AS SHOWN).




| DRAWN | CHECKED | DIMENSIONS IN | TOLERANCES |
| --- | --- | --- | --- |
| B.J | D.G | MILLIMETRES | INCH DIMENSIONS DECIMAL TO 3 PLAC DECIMAL TO 2 PLAC FRACTIONAL |
| TRACED | APPROVED | SCALE | METRIC DIMENSIONS DECIMAL TO 2 PLAC DECIMAL TO 1 PLAC WHOLE DIMENSION |
| DATE 21-4-78 | DATE | 2:1 NOT TO BE SCALED | UNLESS OTHERWISE STAT |

| 5 | 6 | 7 |
|---|---|---|

ALL BURRS TO BE REMOVED

NOTES

| ISS | CHANGES |
|---|---|
| C | – |
| D | NEW ISSUE P.C.B. BJ 14-8-78 MD |
| 1 | RELEASED TO PRODN 25-9-78 |
| 2 | ECO867 PCB UPDATE BJ 11-6-79 MD |
| 2.0 | ECO1984 UPDATED TO ENG. PROC 11 8.4.86 MD |

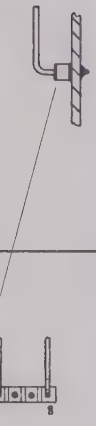
## IMPORTANT

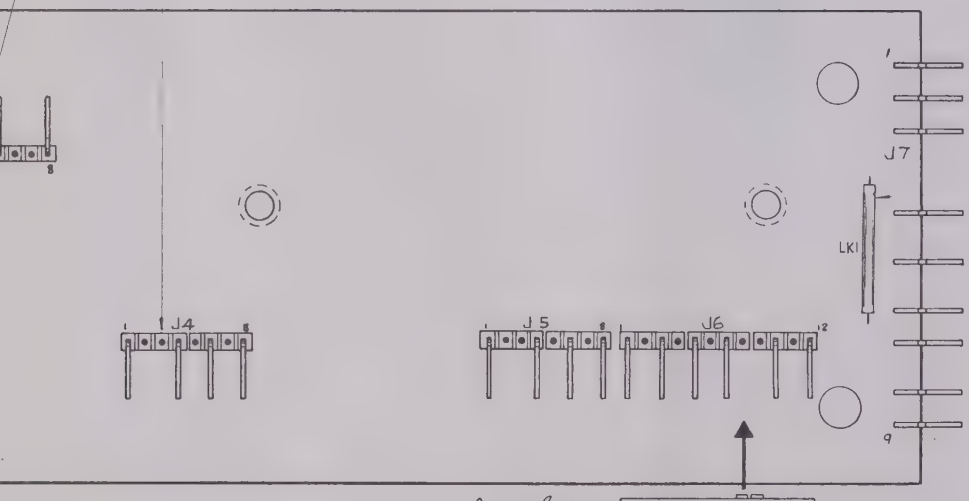
2 OFF. AMP PINS (PART No 604036) MUST BE AFFIXED FIRST.

ENSURE ALL PINS ARE SEATED TIGHT & FLAT TO P.C.B. BEFORE SOLDERING.

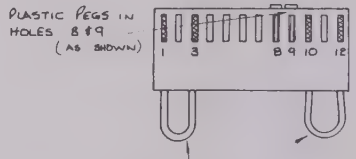
NOTE. PINS ARE HELD TOGETHER BY A PLASTIC STRIP. THIS STRIP IS TO BE CUT TO SUIT THE AMOUNT OF PINS REQUIRED.

PIN ASSY (PART NO 604035). 12 OFF.
UP THE REQUIRED AMOUNT OF CONTACTS (SHOWN BELOW).
VN BY BLACK DOTS.

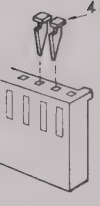





THIS LINK TO BE COVERED WITH SLEEVE PART No 590001.




4 OFF PLASTIC PEGS (PART No 606004) INSERTED INTO HOLES.



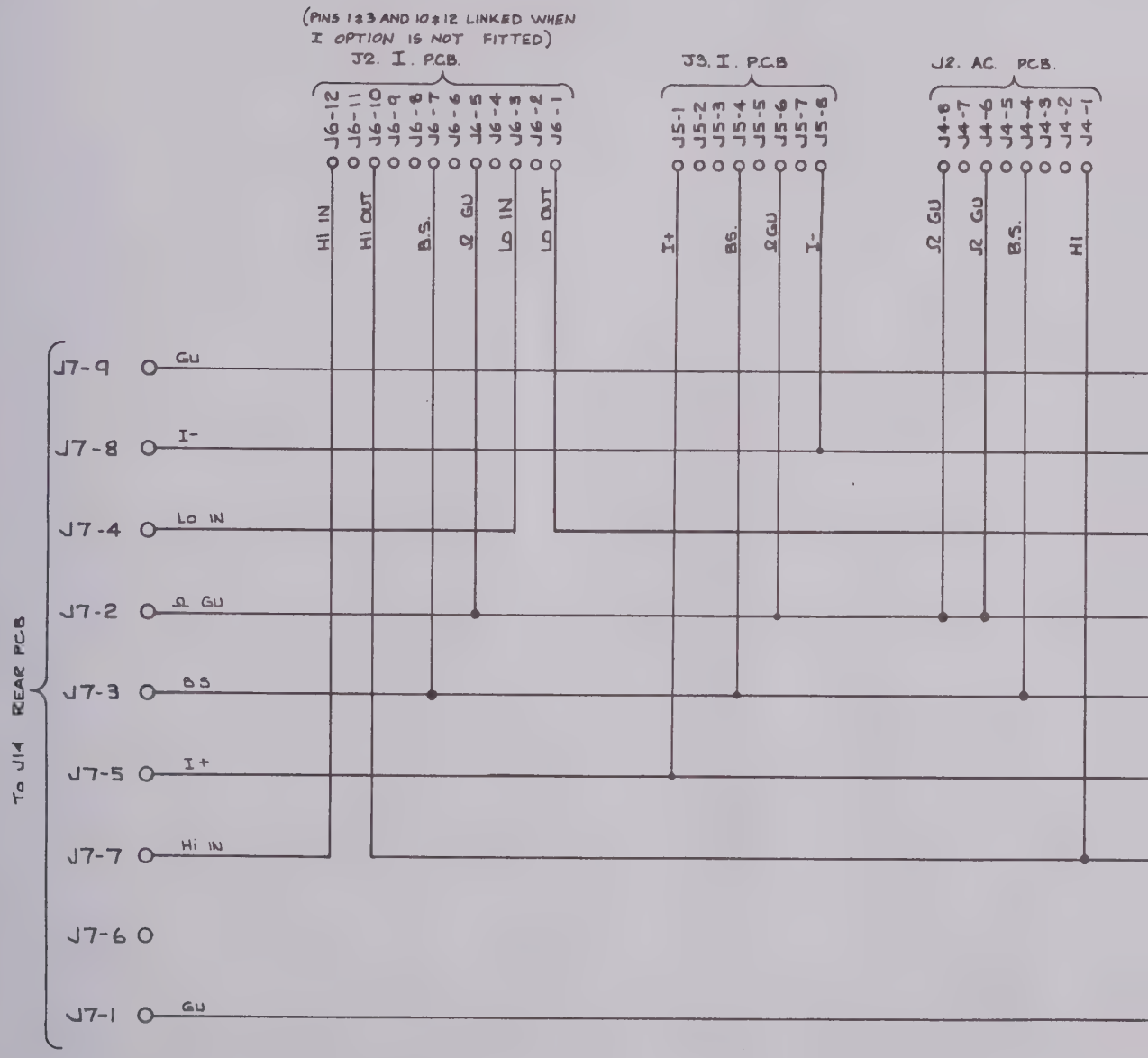
INSERT WIRES IN HOLES 10 & 12 OF SOCKET. AND 1 & 3 AS SHOWN ABOVE.

| | | | | |
|---|---|---|---|---|
| ANGULAR ± ° 005 010 1/64 1mm 2mm 4mm | MATERIAL / FINISH | datron ELECTRONICS LTD. NORWICH. | DRAWING SIZE A1 | |
| | | TITLE 1061/71/81 L.H. P.C.B. ASSEMBLY | DRAWING No 480297 | SHEET 1 OF 1 |

| DRAWING No. |
| --- |
| 430297 |
| FIRST USED ON |
| 1061/1071 |

# THIRD ANGLE PROJECTION

DRAWN IN ACCORDANCE WITH BS 308




| DRAWN | CHECKED | DIMENSIONS IN | TOLERANCES ANGULAR ± ½° | MATERIAL |
| --- | --- | --- | --- | --- |
| B.J. | DCJ | MILLIMETRES | INCH DIMENSIONS<br>DECIMAL TO 3 PLACES ± .005<br>DECIMAL TO 2 PLACES ± .010<br>FRACTIONAL ± 1/64 | |
| TRACED | APPROVED | SCALE | METRIC DIMENSIONS<br>DECIMAL TO 2 PLACES ± 1mm<br>DECIMAL TO 1 PLACE ± 2mm<br>WHOLE DIMENSIONS ∓ 4mm | FINISH |
| DATE 30.5.78 | DATE | NOT TO BE SCALED | UNLESS OTHERWISE STATED | |

J W 1162

4 | 5 | 6

BURRS TO BE REMOVED

NOTES

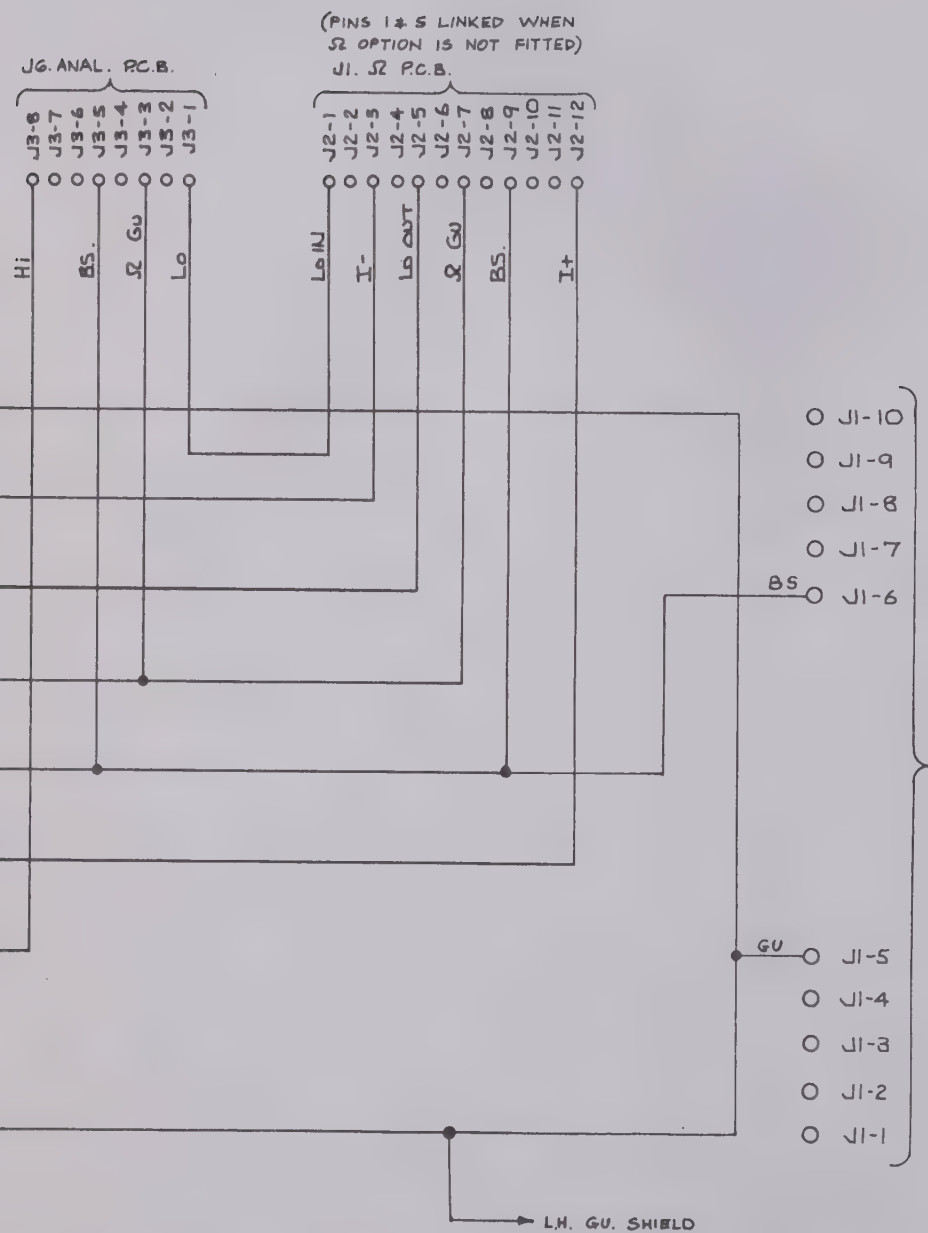
1/ ALL CIRCUIT TO BE ON THE COMPONENT (SHEET 3) SIDE OF P.C.B WHERE POSSIBLE.

2/ INPUT GUARD, VIA J7-1 TO PROVIDE ELECTROSTATIC SHIELD ON CIRCUIT (SHEET 2) SIDE OF P.C.B. WHERE POSSIBLE.

3/ B.S, VIA J3-5, TO ENCLOSE Hi AND I+ CIRCUITS ON P.C.B WHERE POSSIBLE.

4/ Ω GUARD VIA J3-3 TO ENCLOSE LO & I- CIRCUITS ON P.C.B WHERE POSSIBLE.

| ISS. | CHANGES |
|---|---|
| D | |
| 1 | RELEASED TO PROD N. 29-9-78 |
| 2.0 | ECO 1384 UPDATED TO ENG. PROC. 11 IL. 8.4.86 |




datron ELECTRONICS LTD. NORWICH.

DRAWING SIZE A2

TLE

L.H. P.C.B. SCHEMATIC 1061/1071/1081

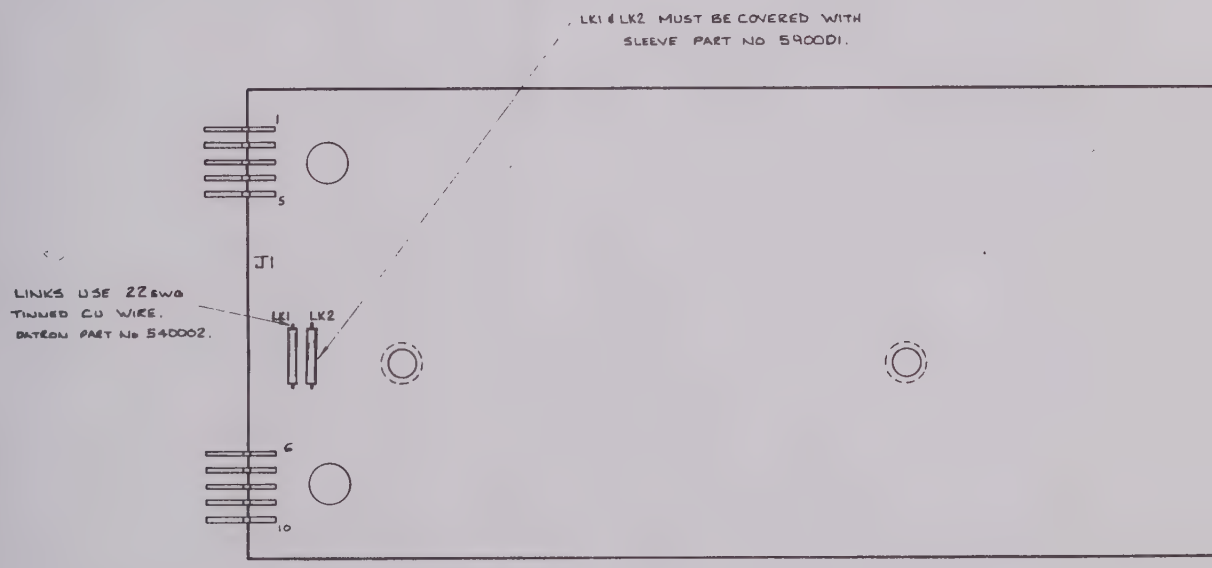
DRAWING No. 430297

SHEET 1 OF 1

| DRAWING No. |
| --- |
| 480298. |
| FIRST USED ON |
| 1061/71 |

# THIRD ANGLE PROJECTION

DRAWN IN ACCORDANCE WITH BS 308




## IMPORTANT

AMP PINS (DATRON PART No.604036.) 4 OFF MUST BE AFFIXED TO P.C.B FIRST. ENSURE ALL PINS ARE SEATING TIGHTLY AND FLAT TO PCB. BEFORE SOLDERING.

NOTE. PINS ARE HELD TOGETHER BY PLASTIC STRIP. THIS STRIP IS TO BE CUT TO SUIT THE AMOUNT OF PINS REQUIRED.

FOR EXAMPLE. ABOVE 2 BLOCKS OF 5 PINS ARE REQUIRED, THEREFORE STRIP OF 10 PINS TO BE CUT IN HALF.

| DRAWN | CHECKED | DIMENSIONS IN | TOLERANCES |
| --- | --- | --- | --- |
| B.J. | | | INCH DIMENSIONS |
| TRACED | APPROVED | MILLIMETRES | DECIMAL TO 3 PLA |
| | | | DECIMAL TO 2 PLA |
| | | SCALE | FRACTIONAL |
| DATE | DATE | 2:1 | METRIC DIMENSIONS |
| 20.4.78. | | NOT TO BE SCALED | DECIMAL TO 2 PLA |
| | | | DECIMAL TO 1 PLA |
| | | | WHOLE DIMENSION |
| | | | UNLESS OTHERWISE STA |

JW 76

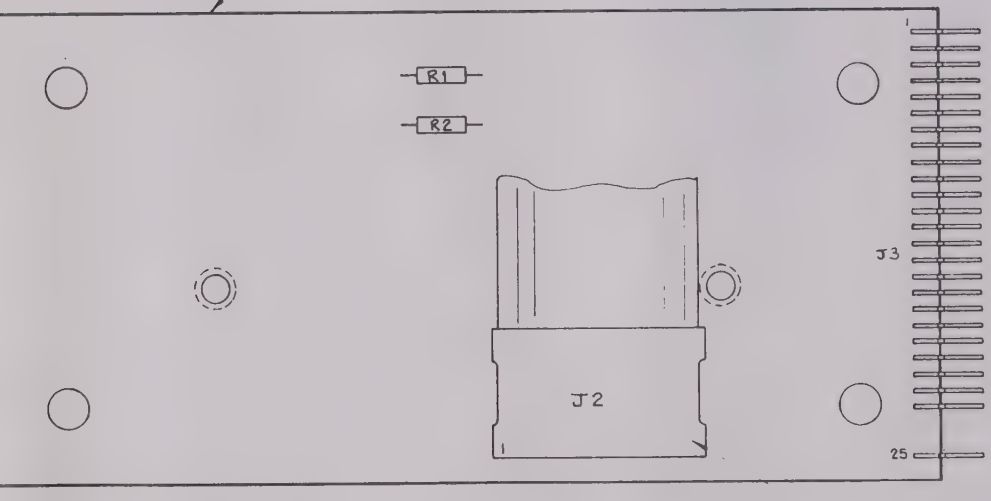
| 5 | 6 | 7 |
|---|---|---|

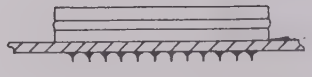
ALL BURRS TO BE REMOVED

NOTES

| ISS. | CHANGES |
|---|---|
| C | |
| D | NEW ISSUE P.C.B B.J 24.8.78 MD |
| 1 | RELEASED TO PROD'N 29-9-78. |
| 2 | ECO 850. 4-5-79 B.J UPDATED P.C.B J1-6 WAS REMOVED MD |
| 3 | ECO 867 & 904 B.J UPDATED P.C.B CABLE ASSY 400368 CHANGED TO 574250/A MD |
| 4 | ECO 943 10.9.79 RIBBON CABLE ASSY. WAS 574250/A IL. BL |
| 5 | ECO 1217 J2 WAS 4-00365 OR 10.8.81 MD |
| 6 | ECO 1474 PCB ISSUE Nº WAS 4 IL. 3.6.83 MD |
| 6.0 | ECO 1584 UPDATED TO ENG. PROC. 11 IL. 8.4.86 MD |

RIGHT HAND SIDE P.C.B 410094-4A



RIBBON CABLE ASSY
PART No 574270/C

NOTE. WHEN SOLDERING CABLE PLUG INTO BOARD ENSURE THAT THE PLUG BODY SITS FLAT AGAINST P.C.B.

AFTER ASSEMBLING P.C.B WRAP THE ABOVE RIBBON CABLE ROUND THE P.C.B AND TAPE DOWN USING MASKING TAPE PART No 630099.

ANGULAR ± °
± .005
± .010
± 1/64
± 1mm
± 2mm
± 4mm

MATERIAL

FINISH

datron ELECTRONICS LTD. NORWICH.

TITLE
1061/71/81. R.H. P.C.B. ASSEMBLY.

DRAWING No.
480298

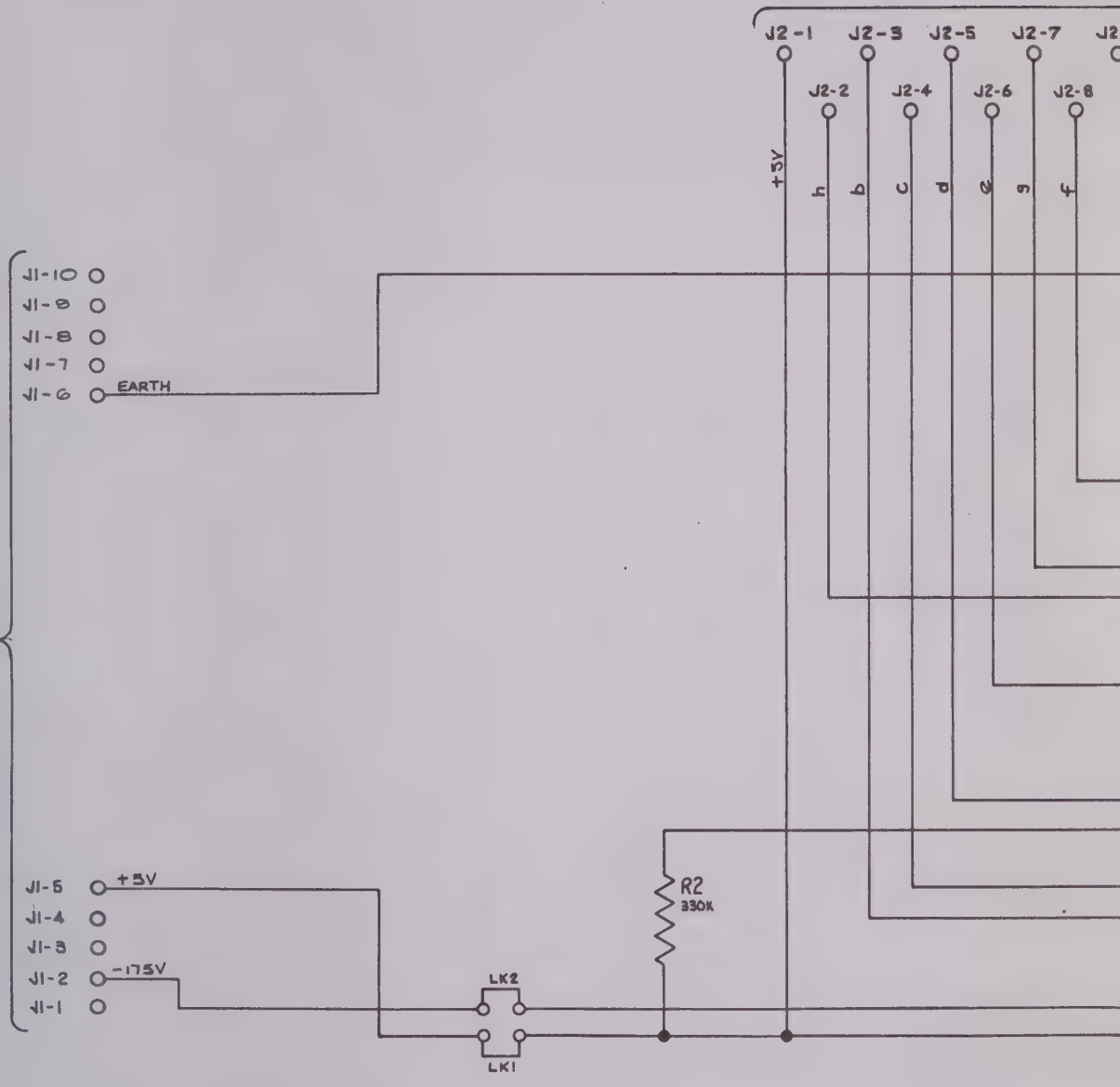
DRAWING SIZE
A1

SHEET
1 OF 1

DRAWING No.
430298
FIRST USED ON
1061 / 1071

# THIRD ANGLE PROJECTION

DRAWN IN ACCORDANCE WITH BS 308

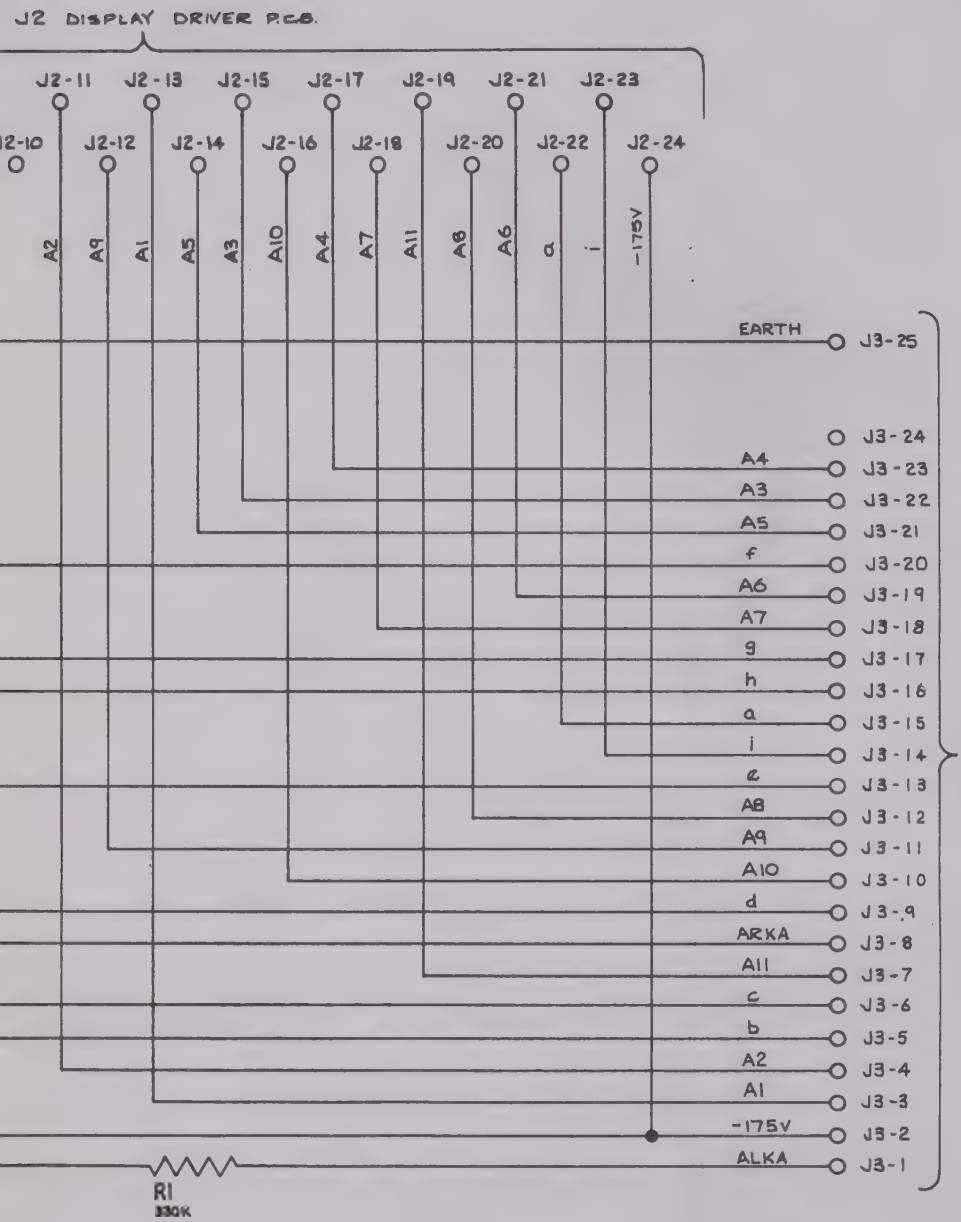



| | | | | |
|---|---|---|---|---|
| DRAWN B.J. | CHECKED | DIMENSIONS IN MILLIMETRES | TOLERANCES ANGULAR ± ½° INCH DIMENSIONS DECIMAL TO 3 PLACES ± .005 DECIMAL TO 2 PLACES ± .010 FRACTIONAL ± 1/64 METRIC DIMENSIONS DECIMAL TO 2 PLACES ± 1mm DECIMAL TO 1 PLACE ± 2mm WHOLE DIMENSIONS ± 4mm UNLESS OTHERWISE STATED | MATERIAL |
| TRACED | APPROVED | SCALE NOT TO BE SCALED | | FINISH |
| DATE 26-5-78 | DATE | | | |

J W 1162

| 4 | 5 | 6 |
|---|---|---|
| BURRS TO BE REMOVED | | NOTES |

| ISS. | CHANGES |
|---|---|
| D | |
| 1[C] | RELEASED TO PROD 29-9-78 |
| 2 | DIG COM SCREEN REMOVED. B.L. ECO 850 4-5-79. MD |
| 6.0 | ECO 1984 UPDATED TO ENG. PROC. 11 IL 8.4.86 MD |




datron ELECTRONICS LTD. NORWICH.

DRAWING SIZE A2

| TITLE | DRAWING No. | SHEET |
|---|---|---|
| R.H. SIDE P.C.B. SCHEMATIC. 1061/1071/1081 | 430298 | 1 OF 1 |

| DRAWING No |
|---|
| 480304 |
| FIRST USED ON |
| 1061/1071 |

# THIRD ANGLE PROJECTION

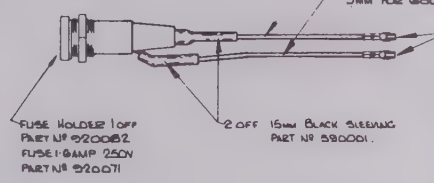
DRAWN IN ACCORDANCE WITH BS 308

R25 NOTE

* IMPORTANT NO

R25 RESISTOR
FITTED LAST, SO
RL3 & RL4 WIR
P.C.B CAN BE
WITH EASE.

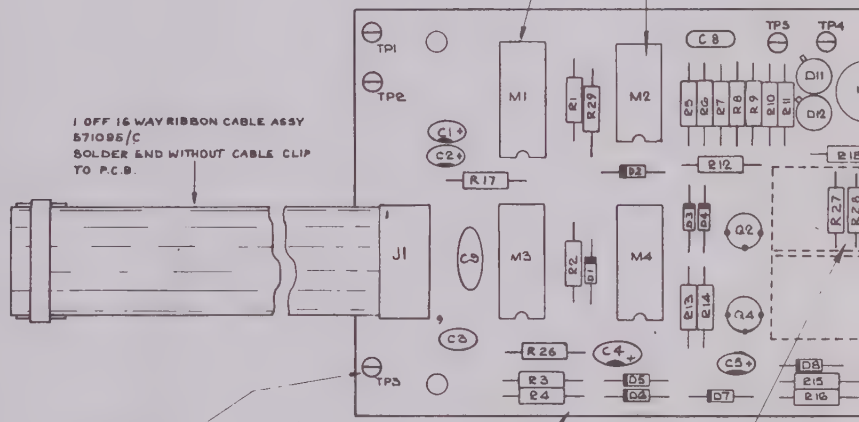
CURRENT OPTION FUSE ASSEMBLY


BROWN WIRE 60MM LONG & ONE END STRIPPED 3MM FOR GOLD CRIMP PIN FITTING.
BROWN WIRE 70MM LONG & ONE END STRIPPED 3MM FOR GOLD CRIMP PIN FITTING.
CRIMP TWO GOLD CRIMP PINS PART Nº 605057-USING CRIMP TOOL Nº HTR 2262 A FITTED INTO A 4 WAY POLARISED SOCKET (PINS 1&4) PART Nº 605051
FUSE HOLDER 1 OFF PART Nº 920082 FUSE 1·6AMP 250V PART Nº 920071
2 OFF 15MM BLACK SLEEVING PART Nº 590001.

MOUNT M1 M3 & M4 ON 16 WAY D.I.L SOCKETS PART Nº 605061 3OFF

MOUNT M2 ON 14 WAY D.I.L SOCKET PART Nº 605060 1OFF.

FIT D13-DIG ON S
-3 PER LEAD. 6300




1 OFF 16 WAY RIBBON CABLE ASSY 571095/C SOLDER END WITHOUT CABLE CLIP TO P.C.B.

TEST POINT TERMINAL (620007) 5 OFF

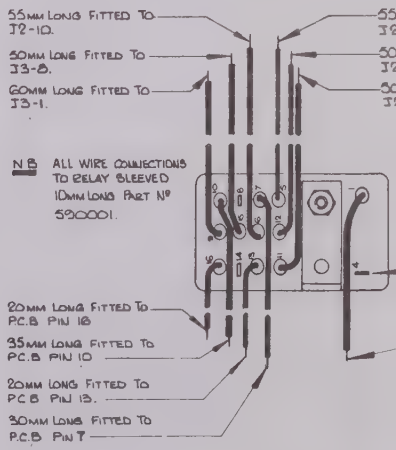
PRINTED CIRCUIT BOARD PART Nº 410104-5A

USE

R27+28 ARE NOT USED WITH OMRON ALTERNATIVES

WIRING DETAILS RL3

ALL WIRES TO BE 7/·2 PTFE COVERED-WHITE PART Nº 512999. LENGTHS AS BELOW.


55MM LONG FITTED TO J2-10.
50MM LONG FITTED TO J3-8.
60MM LONG FITTED TO J3-1.
N.B ALL WIRE CONNECTIONS TO RELAY SLEEVED 10MM LONG PART Nº 590001.
20MM LONG FITTED TO P.C.B PIN 16
35MM LONG FITTED TO P.C.B PIN 10
20MM LONG FITTED TO P.C.B PIN 13.
30MM LONG FITTED TO P.C.B PIN 7

| DRAWN | CHECKED | DIMENSIONS IN | TOLERANCES |
|---|---|---|---|
| W.G.SMITH | | MILLIMETRES | INCH DIMENSIONS DECIMAL TO 1 DECIMAL TO 2 FRACTIONAL |
| TRACED | APPROVED | SCALE | METRIC DIMENSIONS DECIMAL TO 2 DECIMAL TO 1 WHOLE DIMEN |
| DATE 16 JULY 79 | DATE | NOT TO BE SCALED | UNLESS OTHERWISE |

JW 116

| 5 | 6 | 7 |
|---|---|---|

ALL BURRS TO BE REMOVED

## NOTES

| ISS. | CHANGES |
|---|---|
| A | 17 JULY 79 W.G.S. |
| B | C1 POSITION CHANGED PCB WAS ISSUE 2. R2 & C4 VALUES CHANGED W.G.S. 21 AUG 79 |
| C | STEATITE BEADS ADDED, TO MOUNT D13 - D16 24 OFF. IL 24.9.79 |
| 1 | RELEASED TO PRODUCTION 24.9.79 |
| 2 | ECO 972, 987 RL3 & RL4 WERE 1FT. RELAY WIRING WAS P.V.C. BJ 26-10-79 |
| 3 | ECO's 1000, 1012, 1037 & 1038 RIBBON CABLE CLIP WAS 606007. CABLE WAS S710080/A. FUSE HOLDER WAS 970047 C7 WAS 2n2F LK1 ADDED. R8, R9, D9, D10, Q5 & Q6 DELETED. B.J. 4-1-80 |
| 4 | ECO 1048 R26-R28 ADDED IL 17.1.80 |
| 5 | ECO. 1089 - 1110. 1087 J2-7 J3-4 & J3-6 WERE 605057 D17 & D18 REMOVED C8 ADDED IL 18.4.80 |
| 6 | ECO. 1116 R29 ADDED. CUT TRACK ON PCB BETWEEN M2/8 & J1-9 PARTS LIST CHANGE TO C8 IL 3.6.80 |
| 7 | ECO 1189 OHMS GUARD LEAD WAS 400379/2 IL 17.12.80 |
| 8 | ECO 1080 R8, C9. ADDED R12 WAS 1K R13, 7 WERE 12K R5, 6, 14 WERE 27K R26, 27, 28 WERE 10K R17 WAS 1M Q1, Q3, AN1, LK1 DELETED JR 25.2.81 |
| 9 | ECO 1217 J1 WAS 18 WAY SOCKET JR 10.6.81 |
| 10 | ECO 1237 R27 & 28 WERE 330 R. JR 24.11.81 |
| 11 | ECO 1525 D13, D14, D15 AND D16 WERE 200010. PCB WAS ISSUE 5. JR 16.5.83. |
| 12 | ECO 1635 R24 WAS ¼ CARBON M1 M3 WERE MC1407G M2 WAS MC1403. 2 STEATITE BEADS ADDED TO MOUNT R24 IL 21.5.85 |
| 12.0 | ECO 1984 UPDATED TO ENG PROC 11 IL 26.3.86 |

OHMS GUARD LEAD DETAIL

70 MM FINAL LENGTH.
PART Nº 400379/1

NYLATCH ASSEMBLY
(4 POSITIONS)

NYLATCH PLUNGER
PART Nº G17010 - 4 OFF
N.B FIT FROM COMPONENT SIDE OF P.C. BOARD

NYLATCH GROMMET
PART Nº G17011 - 4 OFF

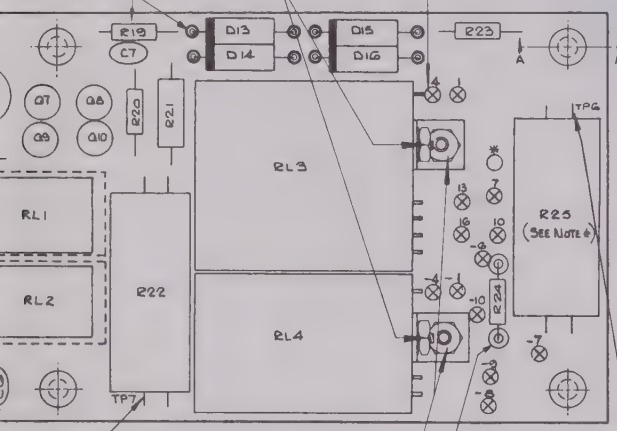
SECTION A-A TYPICAL

FOR DIFFERENT MAKES OF R19 C7 MUST BE CHANGED ACCORDINGLY SEE SHT 3 FOR FULL DETAILS.

RETAIN RELAY TO BRACKET WITH 3-48UNC NUT PART Nº G15005 & M2.5 WASHER PART Nº G13014 2 OFF EACH (2 POSITIONS)

13 OFF P.C.B TERMINALS PART Nº G20003

12 WAY POLARISED SOCKET PART Nº 605053 1 OFF.




FROM RL3 PIN 5 — Hi IN
FROM RL3 PIN 6 — Hi OUT
OHM GRD FROM P.C.B * — Ω GUARD
FROM RL3 PIN 11 — LO IN
FROM RL3 PIN 12 — LO OUT
J2 — B.S

CONNECT J2 TO J6 ON L.H P.C BOARD

CRIMP TERMINAL 605056 3 OFF FOR BLANKING ONLY. (MOLEX 4809 TIN)

FROM RL3 PIN 15 — I-
FROM RL3 PIN 9 — I+
J3 — Ω GU — B.S

CONNECT J3 TO J5 ON L.H P.C BOARD

8 WAY POLARISED SOCKET PART Nº 605052 - 10 OFF

USE R25 LEAD AS TPG

MOUNT R24 ON STEATITE BEADS 630036. 2 OFF

RETAIN RELAY BRACKETS TO P.C.B WITH 2 × M3 × 6 POZI PAN SCREWS PT Nº G11004 & 2 × M3 FULL NUT PT Nº G15002 & 2 × M3 SHAKEPROOF WASHERS PART Nº G13008

LEAD AS T P7

WIRING DETAILS RL4
ALL WIRES TO BE 7/12 PTFE COVERED - WHITE PART Nº 612559. LENGTHS AS BELOW.

FIT MOLEX TERMINALS 4809 GOLD PART Nº 605057 6F OFF USING CRIMP TOOL Nº HTR 22-32A

LONG FITTED TO

LONG FITTED TO

LONG FITTED TO

35MM LONG FITTED TO P.C.B PIN -7

N.B ALL WIRE CONNECTIONS TO RELAY SLEEVED 10MM LONG PART Nº 590001

FIT PIN 4 OVER P.C.B -4 TERMINAL & SOLDER IN POSITION.

FIT PIN 4 OVER P.C.B -4 TERMINAL & SOLDER IN POSITION.

25 MM LONG FITTED TO P.C.B. PIN 1

40MM LONG FITTED TO P.C.B PIN -6

30MM LONG FITTED TO P.C.B PIN -10

30 MM LONG FITTED TO P.C.B PIN -8

26MM LONG FITTED TO P.C.B PIN -9

25 MM LONG FITTED TO P.C.B PIN -1.

ANGULAR + °
CES + 005
CES + 010
+ 1/64
ES + 1mm
CE + 2mm
IS + 4mm
TED

MATERIAL

FINISH

datron ELECTRONICS LTD. NORWICH.

TITLE
CURRENT P.C. BOARD LAYOUT 1061/1071

DRAWING SIZE
A1

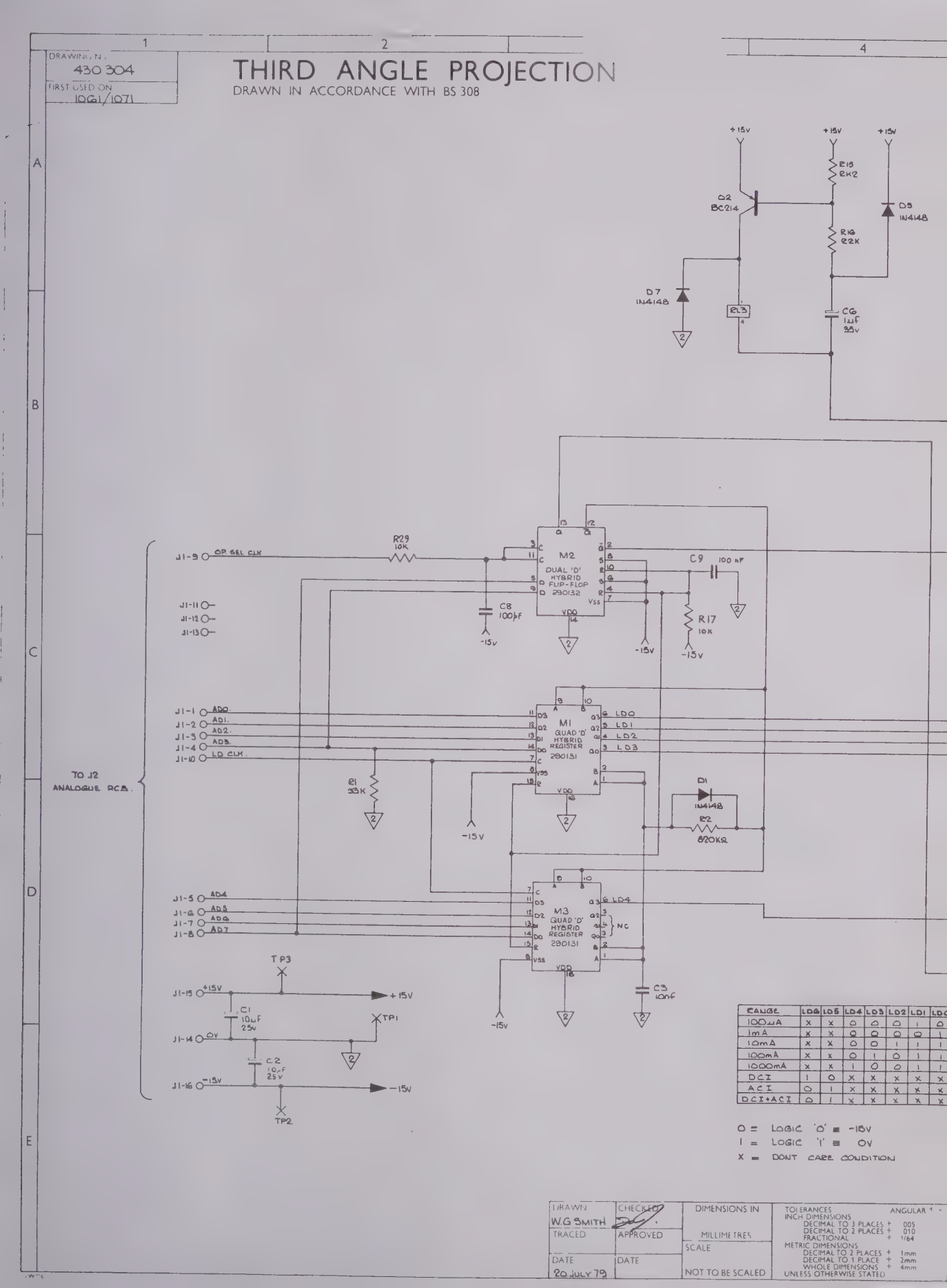
DRAWING No
480304

SHEET
1 OF 1

DRAWING No.
430 304
FIRST USED ON
1061/1071

# THIRD ANGLE PROJECTION

DRAWN IN ACCORDANCE WITH BS 308




| RANGE | LD0 | LD5 | LD4 | LD3 | LD2 | LD1 | LD0 |
|---|---|---|---|---|---|---|---|
| 100uA | X | X | 0 | 0 | 0 | 1 | 0 |
| 1mA | X | X | 0 | 0 | 0 | 0 | 1 |
| 10mA | X | X | 0 | 0 | 1 | 1 | 1 |
| 100mA | X | X | 0 | 1 | 0 | 1 | 1 |
| 1000mA | X | X | 1 | 0 | 0 | 1 | 1 |
| DCI | 1 | 0 | X | X | X | X | X |
| ACI | 0 | 1 | X | X | X | X | X |
| DCI+ACI | 0 | 1 | X | X | X | X | X |

0 = LOGIC '0' ≡ -15V
1 = LOGIC '1' ≡ 0V
X = DONT CARE CONDITION

| | | | |
|---|---|---|---|
| DRAWN W.G SMITH | CHECKED | DIMENSIONS IN MILLIMETRES | TOLERANCES ANGULAR ± ° |
| TRACED | APPROVED | SCALE NOT TO BE SCALED | INCH DIMENSIONS DECIMAL TO 3 PLACES ± .005; DECIMAL TO 2 PLACES ± .010; FRACTIONAL ± 1/64 |
| DATE 20 JULY 79 | DATE | | METRIC DIMENSIONS DECIMAL TO 2 PLACES ± 1mm; DECIMAL TO 1 PLACE ± 2mm; WHOLE DIMENSIONS ± 4mm; UNLESS OTHERWISE STATED |

5 | 6 | 7

ALL BURRS TO BE REMOVED

NOTES

| ISS | CHANGES |
|---|---|
| A | 18 JULY 79 WGS. |
| B | R9 WAS 1MΩ - 000105<br>C4 WAS 10nF 250v CER DISC 10103<br>WGS 21 AUG 79 |
| 1 | RELEASED TO PRODUCTION 24 9 79 |
| 2 | ECO 1057 & 1058<br>SEE SHEET 2. |
| 3 | SEE SHEET 2.<br>ECO.1048<br>IL 18 1 80 |
| 4 | ECO 1087. 1110<br>C8 ADDED<br>IL 14.4.80 |
| 5 | ECO 1116<br>R29 ADDED.<br>C8 WAS 1nF.<br>IL 3 6 80 |
| 6 | ECO1080<br>R13, R14, Q1, Q3<br>*AN1 DELETED.<br>R5-7 C4 MOVED<br>C9 R17, R26-R28<br>ADDED<br>JR 26 2 81 |
| 7 | ECO 1257<br>R27 AND R28 WERE 330R<br>JR 24 11 81 |
| 8 | ECO 1655<br>M1/M3 WERE MC1407K<br>M2 WAS MC14013<br>IL 21.5 85 |
| 12.0 | ECO 1984<br>UPDATED TO ENG. PROC. II<br>IL 26.3 86 |

+15V

R4 2K2

Q4 BC214

D5 IN4148

R3 22K

D8 IN4148

RL4 100mA

C5 1μF 35v

R6 100K

TEST TO D3 SHEET 2.

M4 XR2204CP

R5 100K

100μA TO D2 SHEET 2

R7 100K

1mA TO D4 SHEET 2

RL2 10mA

R27 220R

RL1 100mA

R28 220R

C4 680 nF 35 v

-15V

R27,28 ONLY FITTED FOR OMRON RELAYS · SHORTCIRCUIT FOR OTHER RELAYS

datron ELECTRONICS LTD. NORWICH.

DRAWING SIZE A1

TITLE CURRENT PC BOARD CIRCUIT DIAGRAM 1061-1071

DRAWING No. 430304

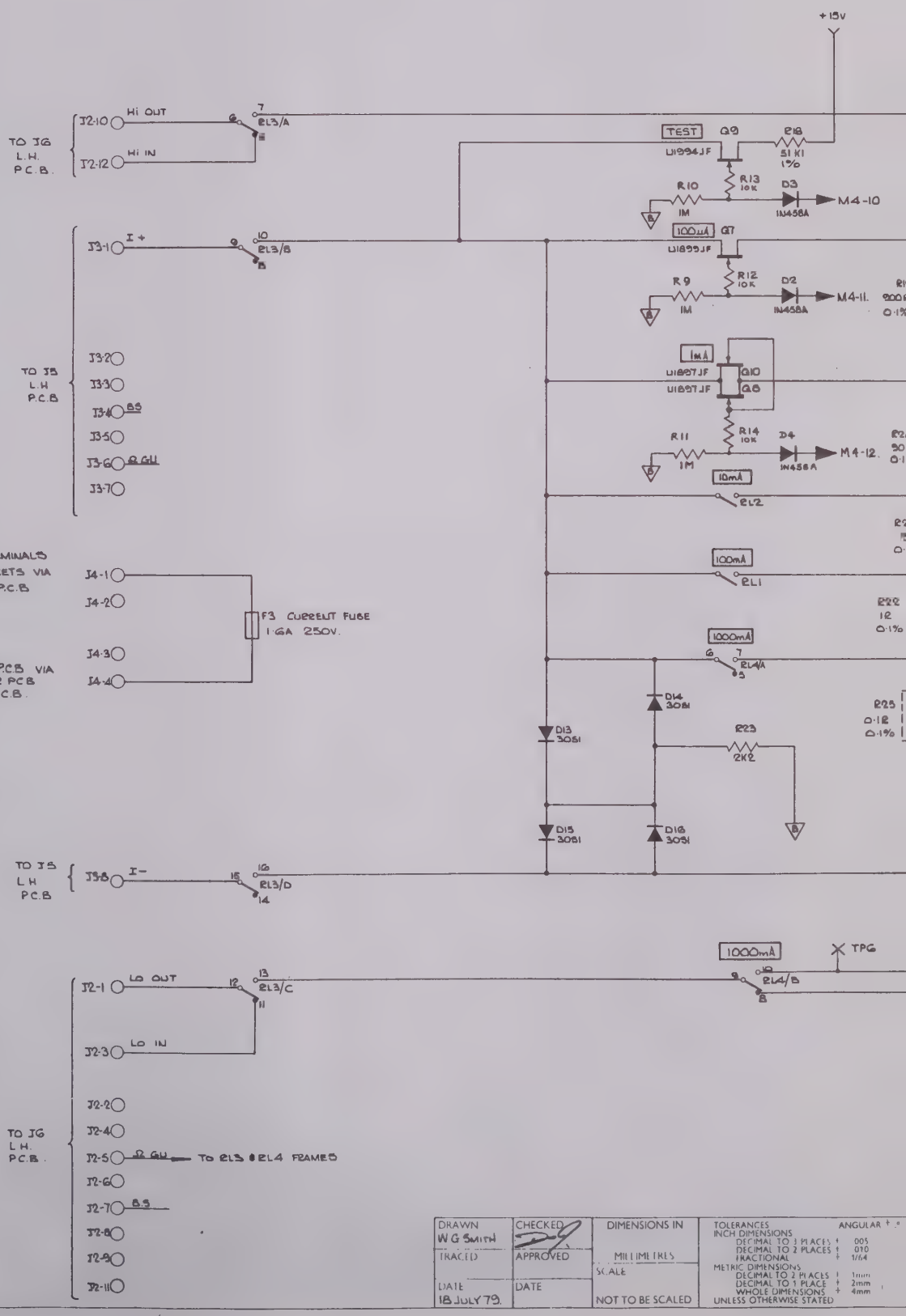
SHEET 1 OF 2

DRAWING No. 430304

FIRST USED ON 1061/1071

# THIRD ANGLE PROJECTION

DRAWN IN ACCORDANCE WITH BS 308




| DRAWN | CHECKED | DIMENSIONS IN | TOLERANCES | ANGULAR ± |
|---|---|---|---|---|
| W G SMITH | | MILLIMETRES | INCH DIMENSIONS | |
| TRACED | APPROVED | SCALE | DECIMAL TO 3 PLACES ± .005 | |
| | | | DECIMAL TO 2 PLACES ± .010 | |
| DATE | DATE | NOT TO BE SCALED | FRACTIONAL ± 1/64 | |
| 18 JULY 79. | | | METRIC DIMENSIONS | |
| | | | DECIMAL TO 2 PLACES ± 1mm | |
| | | | DECIMAL TO 1 PLACE ± 2mm | |
| | | | WHOLE DIMENSIONS ± 4mm | |
| | | | UNLESS OTHERWISE STATED | |

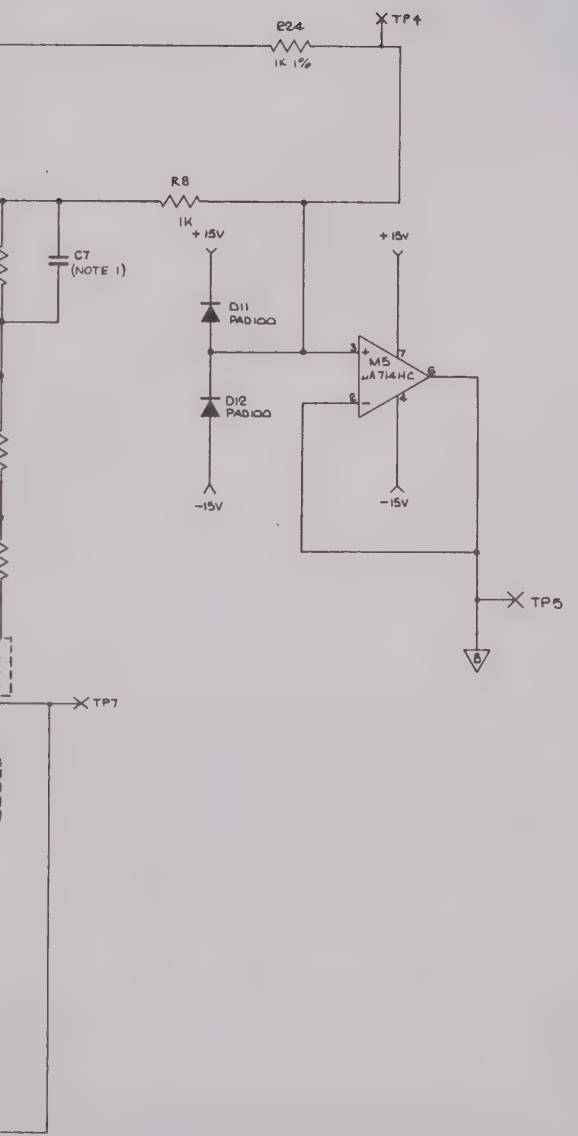
| 5 | 6 | 7 |
|---|---|---|

ALL BURRS TO BE REMOVED

## NOTES

1. 470pF IF R13 MANUFACTURED BY MANN COMP.
   330pF " " " " KELVIN.

| ISS | CHANGES |
|---|---|
| A | 18 JULY 79 WGS |
| B | SEE SHT 1 |
| 1 | RELEASED TO PRODUCTION 24.9.79 |
| 2 | ECO. 1037 & 1038. C7 WAS 2n2F. R8, R9, D9, D10, Q5, & Q6 DELETED B.J. 4.1.80 |
| 3 | ECO 1048 R26-R28 ADDED IL 18.1.80 |
| 4 | ECO 1087 D17. D18 REMOVED IL 14.4.80 |
| 5 | SEE SHEET 1 |
| 6 | ECO 1080 R12-19 TRACKED INTO P.C.B. DESIGNATORS REDEFINED. JR 26.2.81 |
| 7 | SEE SHEET 1 |
| 8 | ECO 1655 R24 WAS ¼W CARBON IL 21.5.85 |
| 120 | ECO. 1984 UPDATED TO ENG. PROC. 11 IL 26.3.86 |




ERIAL

datron ELECTRONICS LTD. NORWICH.

DRAWING SIZE A1

TITLE CURRENT P.C. BOARD CIRCUIT DIAGRAM - 1061-1071

DRAWING No. 430304

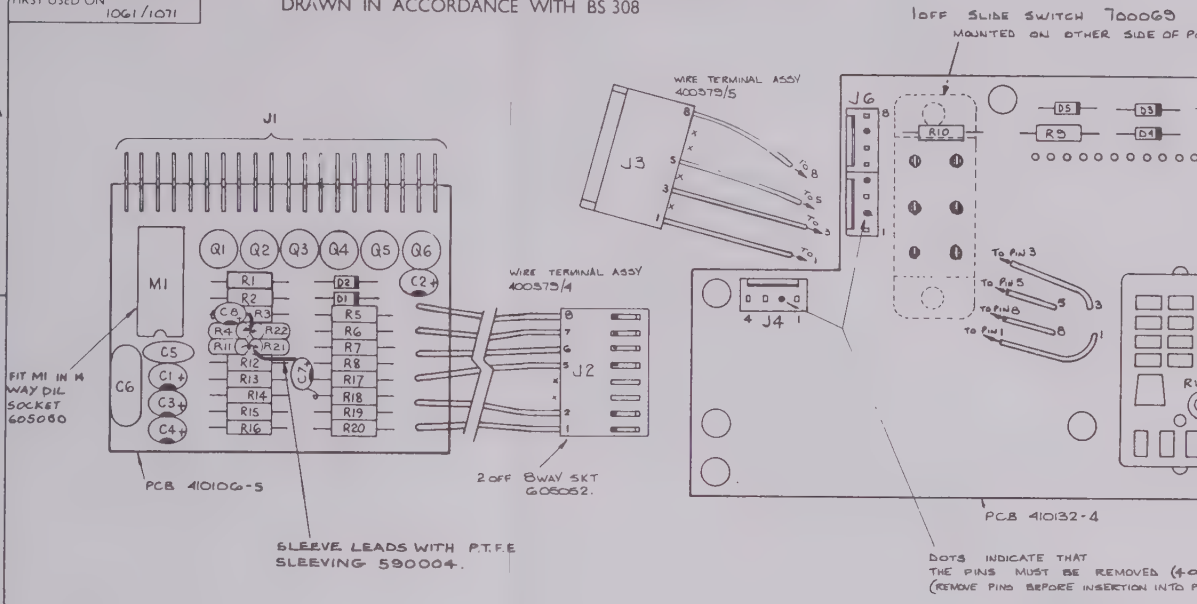
SHEET 2 OF 2

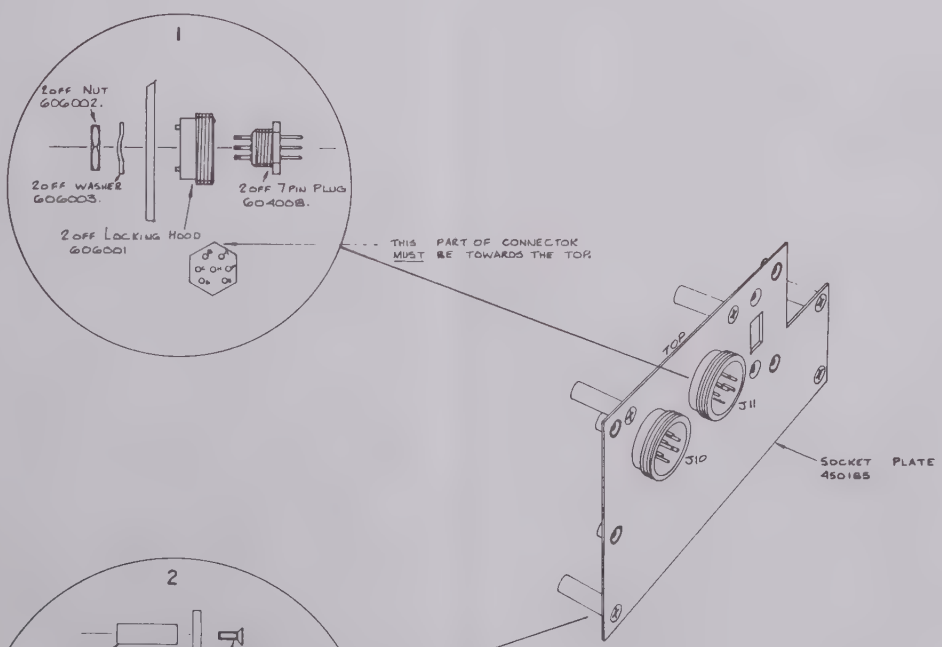
DRAWING No. 480307

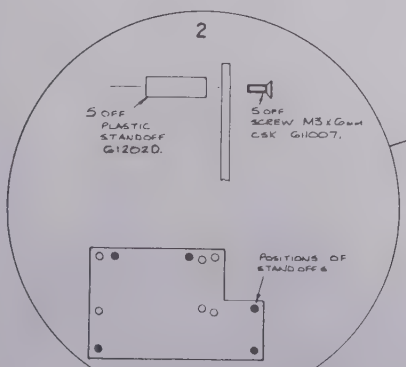
FIRST USED ON 1061/1071

# THIRD ANGLE PROJECTION

DRAWN IN ACCORDANCE WITH BS 308


1 OFF SLIDE SWITCH 700069
MOUNTED ON OTHER SIDE OF P
WIRE TERMINAL ASSY 400379/5
J3
J6
J1
M1
Q1 Q2 Q3 Q4 Q5 Q6
R1 R2 R3 R4 R5 R6 R7 R8 R9 R10 R11 R12 R13 R14 R15 R16 R17 R18 R19 R20 R21 R22
D1 D2 D3 D4 D5
C1 C2 C3 C4 C5 C6 C8
WIRE TERMINAL ASSY 400379/4
J2
J4
FIT M1 IN 14 WAY DIL SOCKET 605060
PCB 410106-5
2 OFF 8WAY SKT 605052.
SLEEVE LEADS WITH P.T.F.E SLEEVING 590004.
PCB 410132-4
DOTS INDICATE THAT THE PINS MUST BE REMOVED (4
REMOVE PINS BEFORE INSERTION INTO P




PROCEDURE

1/ ASSEMBLE THE 7
FIRST # ENSURE
ARE SECURED IN

2/ ASSEMBLE THE 5
POSITION SHOWN

| DRAWN | CHECKED | DIMENSIONS IN | TOLERANCES |
|---|---|---|---|
| B.J | | MILLIMETRES | INCH DIMENSIONS DECIMAL TO 3 PL DECIMAL TO 2 PL FRACTIONAL |
| TRACED | APPROVED | SCALE | METRIC DIMENSIONS DECIMAL TO 2 PL DECIMAL TO 1 PL WHOLE DIMENSI |
| DATE 23-2-79 | DATE | NOT TO BE SCALED | UNLESS OTHERWISE ST |

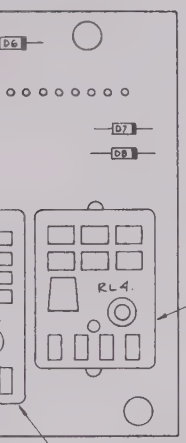
5 | 6 | 7

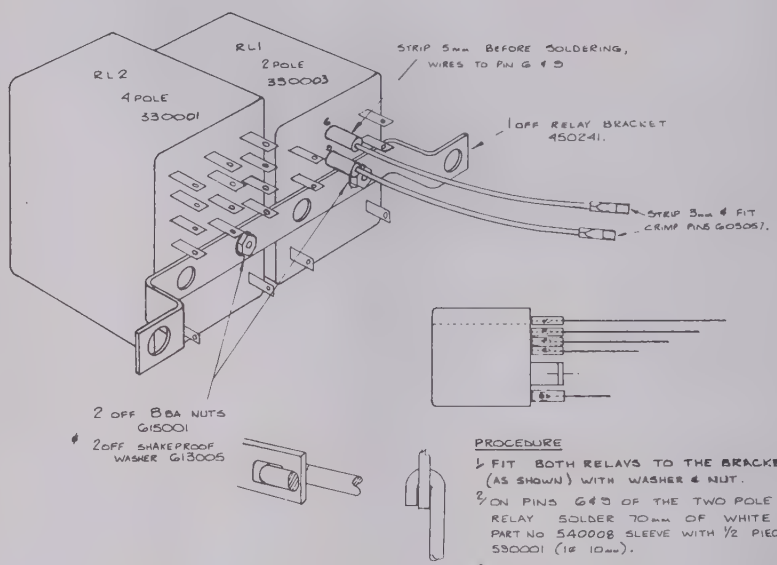
ALL BURRS TO BE REMOVED

## NOTES

IMPORTANT.

FOR CRIMP PINS USE TOOL Nº HTR22G2A.

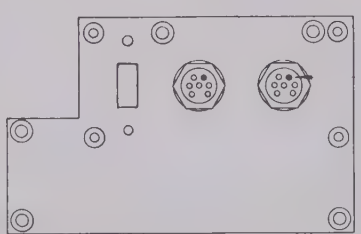


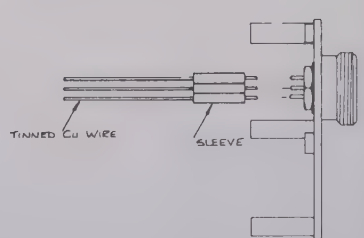

PROCEDURE

1. FIT BOTH RELAYS TO THE BRACKET (AS SHOWN) WITH WASHER & NUT.
2. ON PINS 6 & 9 OF THE TWO POLE RELAY SOLDER 70mm OF WHITE WIRE PART No 540008 SLEEVE WITH ½ PIECE OF 590001 (1@ 10mm).
3. ALL OTHER CONTACTS ARE TO HAVE APPROXIMATELY 60mm OF 22 SWG TINNED COPPER WIRE PART Nº 540002 & SLEEVE EACH WITH ½ PIECE OF 590001.
4. STAGGER LENGTHS OF TINNED COPPER WIRE, TO ASSIST FITTING TO PCB, AS SHOWN.

| ISS | CHANGES |
|---|---|
| A | |
| 1 | RELEASED 26-3-79 |
| 2 | LK1 REPLACED BY R10 1000.00Ω. D6 DELETED E.C.O. 942/887 13 JUNE 79 WAS |
| 3 | ECO 972. 25-10-79 RL1, RL2, RL3 & RL4 WERE I.T.T. B.J. |
| 4 | ECO 981 6-11-79 R9 WAS 33K. B.J. R10 WAS 10Ω R11 & R12 ADDED D7 ADDED D5 DELETED M00339/4 10/11 ADDED PCBS UPDATED |
| 5 | ECO 1021, 1034 R12 MOVED & WAS 33K NOW 1M. LK1 ADDED D7 & R10 DELETED R9 WAS 18K. B.J. 2-1-80 |
| 6 | ECO 1085 POLARISING KEY FOR J3 REMOVED J4 WAS 8 WAY CONN J5 REMOVED - SEE SHEET 2 IL 22 4 80 |
| 7 | ECO 1166 1154 R1 WAS 18k R10 R13 R14 R15 R16 R17 R18 R19 R20 C3. C4. C5. C6 D5 D6. D7 Q5. Q6 & LK1 ADDED IL 24 9 80 |
| 8 | ECO 1199 R10 WAS 12 K JR 24 2 81 |
| 9 | ECO 1329 R21, R22, C7 AND C8 ADDED. PART LIST CHANGES. JR 8 7 82 |
| 10 | ECO 1653 R13/R16 WERE 3k3 MI WAS MC14013BCP IL 20 5 85 |
| 100 | ECO 1984 UPDATED TO ENG PROC 11 IL 26 3 86 |



2 OFF PIN 'B'




PROCEDURE

1. ALL PINS ON EACH SOCKET EXCEPT PIN B (SHOWN SOLID), SOLDER ON 60mm OF TINNED COPPER WIRE PART Nº 540002 & SLEEVE ALL JOINTS WITH APPROXIMATELY 16mm OF SLEEVING PART No 590001.

THERE SHOULD NOW BE 12 WIRES.

PIN PYE PLUGS.
THAT THE CONNECTORS
THE POSITION SHOWN.

STANDOFF'S IN THE
Y THE LARGE DOTS.

ANGULAR ± °
ACES ± .005
ACES ± .010
± 1/64
CES ± 1mm
ACE ± 2mm
NS ± 4mm
LATE

MATERIAL

FINISH

datron ELECTRONICS LTD. NORWICH.

TITLE

REAR INPUT / RATIO ASSY

DRAWING SIZE A1

DRAWING No. 480307

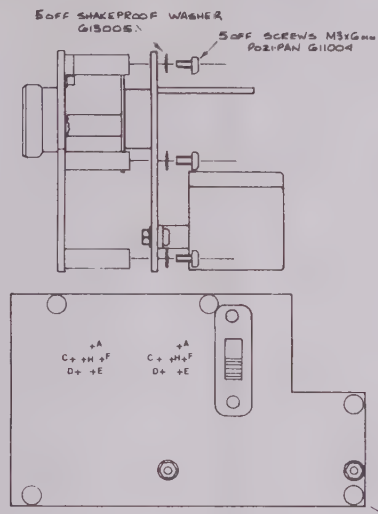
SHEET 1 OF 2

DRAWING No 480307

FIRST USED ON 1061/71

# THIRD ANGLE PROJECTION

DRAWN IN ACCORDANCE WITH BS 308




3./ BOTTOM VIEW SHOWS THE HOLES IN THE P.C.B (INDICATED BY CROSSES). THESE HOLES ARE FOR THE WIRES FROM THE TWO 7 PIN SOCKETS
IT IS A SUGGESTION THAT THE WIRES ARE STAGGERED TO MAKE ASSY EASIER (AS WIRING THE RELAYS).

PROCEDURE.

① THE WIRES SHOULD LINE UP WITH THE APPROPRIATE HOLES. IE. WIRE FROM PIN A OF SOCKET SHOULD BE INSERTED INTO HOLE 'A', WIRE FROM PIN 'C' TO HOLE 'C' AND SO ON.

② WHEN THE WIRES ARE INSERTED IN THE APPROPRIATE HOLES. SECURE THE 2 ASSYS TOGETHER WITH THE M3 X Gmm POZI-PAN SCREWS & SHAKEPROOF WASHERS, SCREWED IN THE 5 STANDOFFS. (AS DETAILED)

③ LIGHTLY PULL ON THE TIN COPPER WIRES SO THE WIRE IS TAUT, THEN SOLDER & CROP IN THE USUAL MANNER.

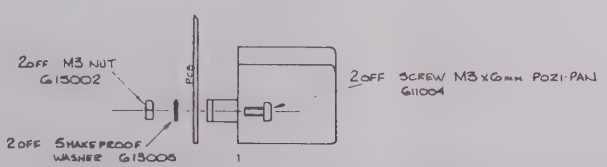
1./ SKETCH BELOW SHOWS THE 2 RELAY & BRACKET ASSEMBLY (FROM SHEET 1). THE CROSSES INDICATE HOLES IN THE PCB INTO WHICH THE WIRES FROM THE RELAYS ARE INSERTED.

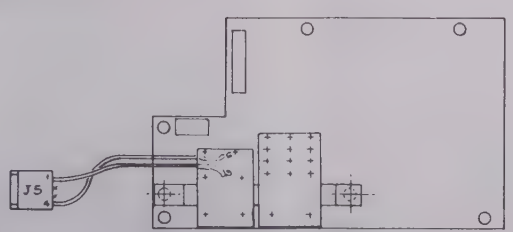
PROCEDURE

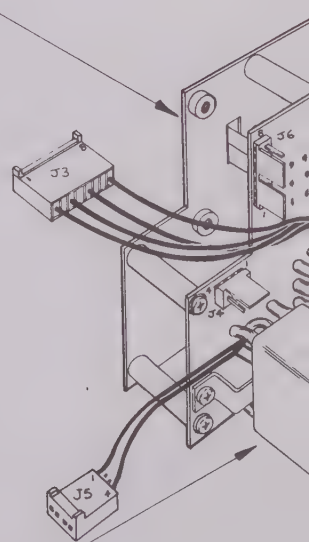
① INSERT THE WIRES INTO THE APPROPRIATE HOLES IN THE PCB (WIRES CUT AT DIFFERENT LENGTHS TO AID ASSEMBLY).

② WHEN THE WIRES ARE ALL IN PLACE SECURE THE BRACKET TO THE PCB USING THE SCREWS, WASHERS & NUTS SHOWN BELOW.

③ SOLDER & CROP WIRES IN THE USUAL MANNER. INSERT THE CRIMP PINS INTO SOCKET J5
PIN 6 OF RELAY TO PIN 4 OF J5 & PIN 5 to PIN 1 AS SHOWN BELOW.




| DRAWN | CHECKED | DIMENSIONS IN | TOLERANCES |
|---|---|---|---|
| B.J. | MJD | MILLIMETRES | INCH DIMENSIONS DECIMAL TO 3 PL DECIMAL TO 2 PL FRACTIONAL |
| TRACED | APPROVED | SCALE | METRIC DIMENSIONS DECIMAL TO 2 PL DECIMAL TO 1 PL WHOLE DIMENSI |
| DATE 2-3-79 | DATE | NOT TO BE SCALED | UNLESS OTHERWISE S |

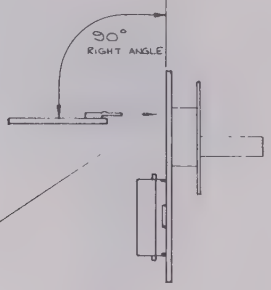
| 5 | 6 | 7 |
|---|---|---|

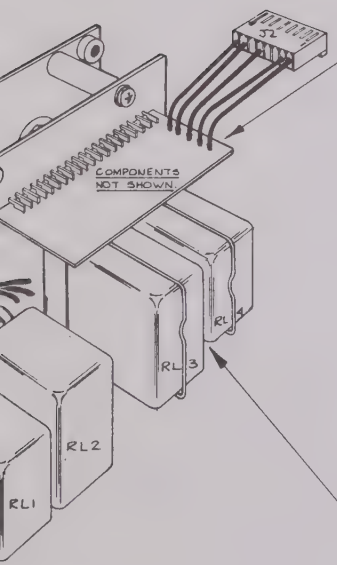
ALL BURRS TO BE REMOVED

NOTES

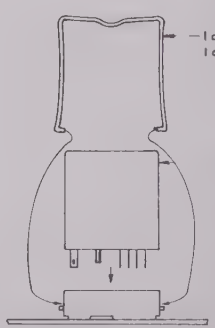
| ISS | CHANGES |
|---|---|
| A | |
| 1 | RELEASED 26-3-79 |
| 2 | ECO 902 SEE SHT 1 5 JUNE 79 W.G.S |
| 3 | SEE SHT 1 25-10-79 B.J |
| 4 | SEE SHT 1. 6-11-79 B.J |
| 5 | SEE SHT. 1. 2-1-80 B.J |
| 6 | ECO 1085 J5 WAS 8 WAY CONN. IL 22.4.80 |
| 7 | SEE SHEET 1 24.9.80 |
| 8 | SEE SHEET 1 24.2.81 |
| 9 | SEE SHT 1 |
| 10 | ECO 1653 SEE SHT. 1 |
| 10.0 | ECO. 1984 UPDATED TO ENG. PROC. 11 IL 26.3.86 |

2. INSERT CONNECTORS AS SHOWN. SOLDER ALL 20 AMP PINS & CROP LEGS IN USUAL MANNER. THE BOARD IS TO BE AT 90° WHEN SOLDERED IN.




FINISHED ASSEMBLY.



1 OFF CLIP G30005. (2 POLE)
1 OFF CLIP G30028. (4 POLE)

1 OFF 2 POLE RELAY 330003
1 OFF 4 POLE RELAY 330001

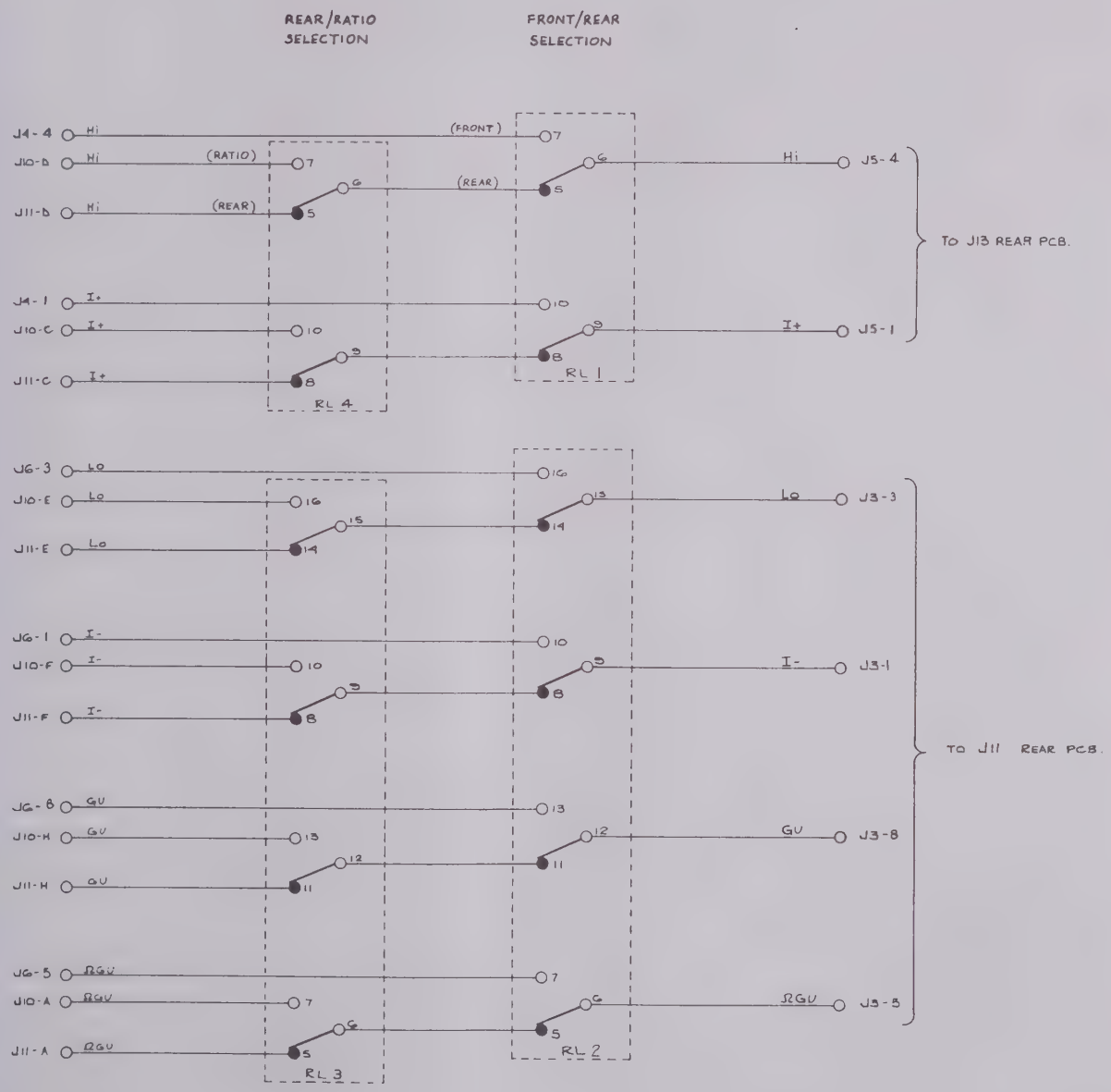
4. THE LAST PROCEDURE IS TO PLUG IN THE 4 & 2 POLE RELAYS & HOLD IN PLACE BY THE CLIPS PROVIDED AS DETAILED IN ABOVE SKETCH & FINISHED VIEW.

| | | | |
|---|---|---|---|
| ANGULAR ± .° | MATERIAL | datron ELECTRONICS LTD. NORWICH. | DRAWING SIZE A1 |
| FINISH | TITLE REAR INPUT / RATIO ASSY. | DRAWING No 480307 | SHEET 2 OF 2 |

DRAWING No.
430307
FIRST USED ON
1061/1071

# THIRD ANGLE PROJECTION

DRAWN IN ACCORDANCE WITH BS 308




NOTE: J4 & J6 ARE FROM THE FRONT PANEL TERMINALS.

J10 IS THE RATIO INPUT SOCKET ON REAR PANEL.

J11 IS THE REAR INPUT SOCKET ON REAR PANEL.

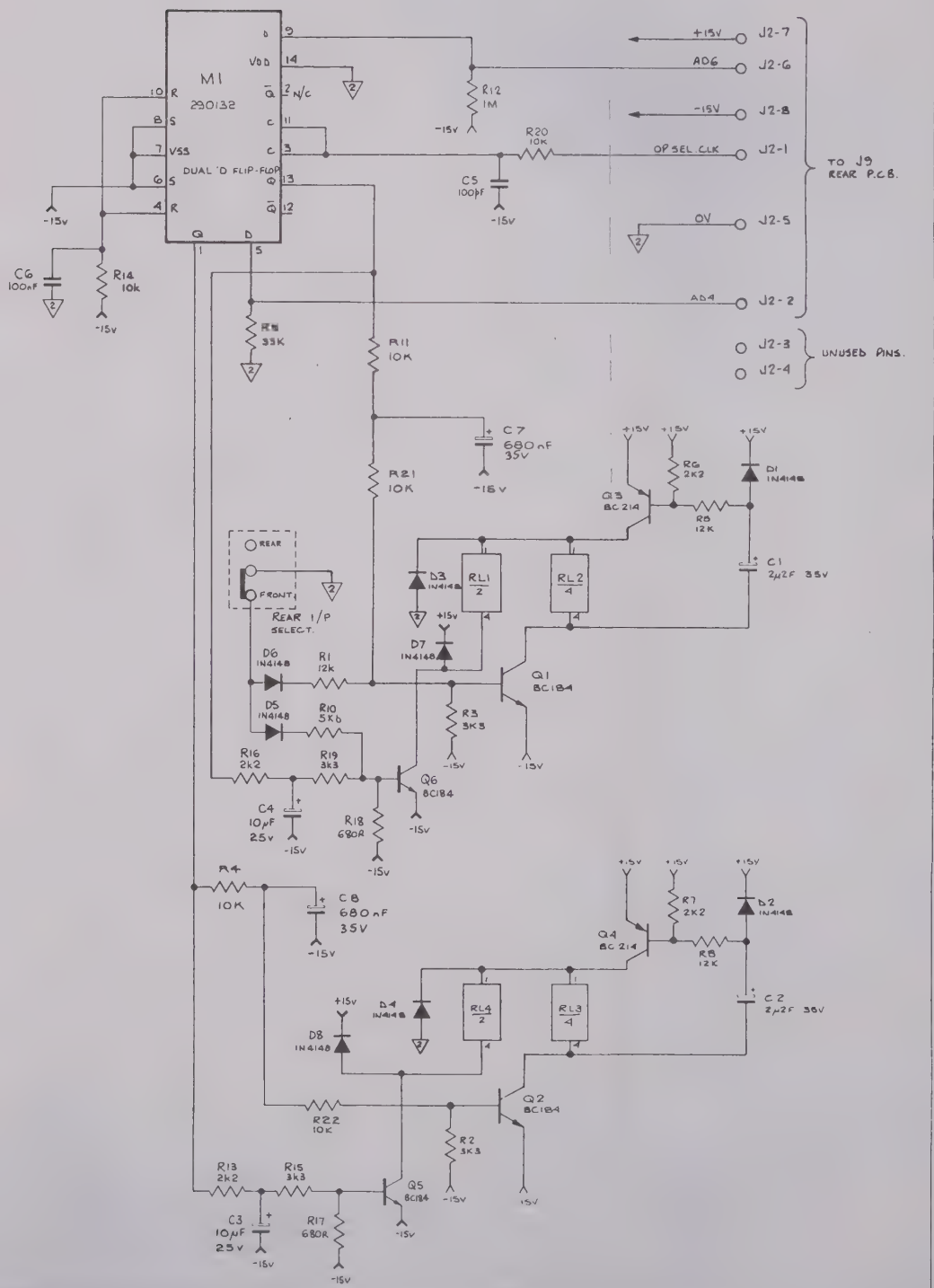
| DRAWN | CHECKED | DIMENSIONS IN | TOLERANCES | ANGULAR + ° | MAT |
|---|---|---|---|---|---|
| B J | | | INCH DIMENSIONS | | |
| TRACED | APPROVED | MILLIMETRES | DECIMAL TO 3 PLACES ± .005 | | |
| | | | DECIMAL TO 2 PLACES ± .010 | | |
| | | SCALE | FRACTIONAL ± 1/64 | | |
| DATE 9-3-79 | DATE | NOT TO BE SCALED | METRIC DIMENSIONS | | FINI |
| | | | DECIMAL TO 2 PLACES ± 1mm | | |
| | | | DECIMAL TO 1 PLACE ± 2mm | | |
| | | | WHOLE DIMENSIONS ± 4mm | | |
| | | | UNLESS OTHERWISE STATED | | |

5 | 6 | 7

ALL BURRS TO BE REMOVED

NOTES

| ISS | CHANGES |
|---|---|
| 1 | RELEASED 26-3-79 |
| 2 | LK1 REPLACED BY R10 10Ω<br>D6 DELETED<br>ECO 8072 BBJ<br>5 JUNE 79 W.G.S |
| 3 | ECO 981 6-11-79 BJ<br>R9 WAS 33K<br>R10 " 10Ω<br>R11 & R12 ADDED<br>D7 ADDED<br>10FF 4003/5/4 ADDED<br>D3 DELETED |
| 4 | ECO 1021 & 1034 BJ<br>R12 WAS JOINED TO J2-6 & M1-14<br>LK1 ADDED.<br>R9 WAS 18K<br>D7 & R10 DELETED.<br>2-1-80 |
| 5 | ECO 1085<br>BS-BETWEEN J4-1 & J5-1 REMOVED<br>PINS OF J4 & J5 RE-NUMBERED FOR 4 WAY CONNECTORS<br>IL 22-4-80 |
| 6 | ECO 1166, 1154<br>R1 WAS 18k<br>R10 R13 R14 R15 R16 R17 R18 R19 R20. C3 C4 C5 C6 D5 D6 D7 D8 Q5 Q6 ADDED<br>IL 24-9-80 |
| 7 | ECO 1199<br>R10 WAS 12K<br>JR 24.2.81 |
| 8 | ECO 1329<br>C3 AND C4 WERE 6μ8F R4 AND R11 WERE 18K.<br>C7, C8, R21 AND R22 ADDED.<br>JR 8-7-82. |
| 9 | ECO 1653<br>R13 R16 WAS 3k3<br>M1 WAS MC14013BCP<br>IL 21.5.85 |
| 10.0 | ECO.1984<br>UPDATED TO ENG PROC 11<br>IL 26.3.86 |




datron ELECTRONICS LTD. NORWICH.

DRAWING SIZE A1

TITLE: REAR INPUT / RATIO CIRCUIT

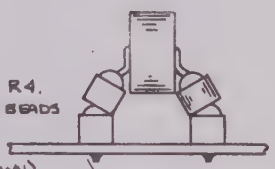
DRAWING No. 430307

SHEET 1 OF 1

| DRAWING No. |
| --- |
| 480308. |
| FIRST USED ON |
| 1061 - 1071 |

# THIRD ANGLE PROJECTION

DRAWN IN ACCORDANCE WITH BS 308



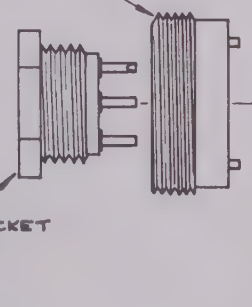
RESISTORS R3 & R4.
2 OFF INSULATING BEADS (PART No G30024) ASSEMBLED ON EACH LEG (AS SHOWN).

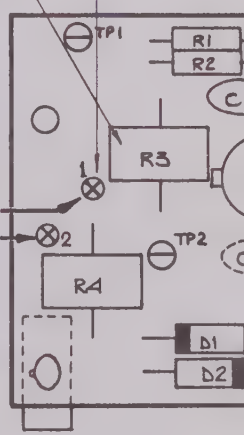
2 OFF SOLDER TERMINAL G20003.

SOCKET PLATE. 45018G.

50mm RED WIRE PART No 510222, WITH APPROXIMATELY 4mm STRIPPED FROM EACH END. SLIDE 1/2 PIECE OF 590001 SLEEVING ON EACH END, TO COVER JOINTS. SOLDER ONE END TO TERMINAL ON PCB (AND SLEEVE), THE OTHER END THROUGH NUT, WASHER, SOCKET PLATE, SOCKET SHROUD & SOLDER TO PIN 'A' ON 5 WAY SOCKET (AND SLEEVE).

LOCKING HOOD G06001

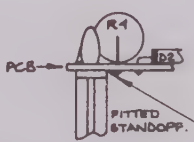



5 WAY SOCKET G05007.

NUT G06002.

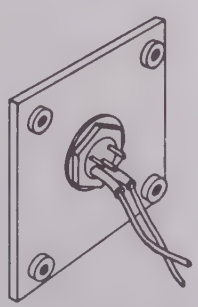
WASHER G06003.




50mm BLACK WIRE PART No 510000. (SAME PROCEDURE AS FOR RED WIRE BUT ONE END TO PIN 'B' OF 5 WAY SOCKET.).

THIS END TO BE
HOLES FROM TH

NYLON ST
G12019. 4



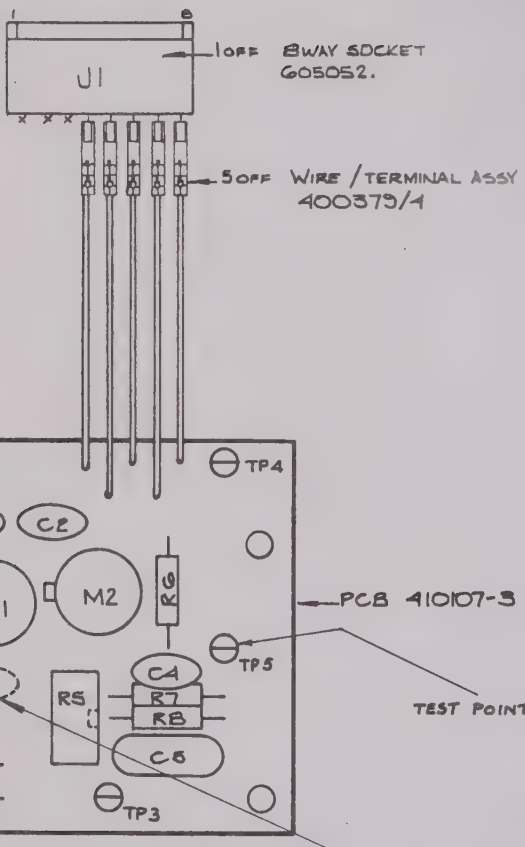
SECURE WHOLE ASSY BY TIGHTENING NUT. (AS ABOVE SKETCH)

| DRAWN | CHECKED | DIMENSIONS IN | TOLERANCES | ANGULAR ± ½° | MATERIAL |
| --- | --- | --- | --- | --- | --- |
| B.J. | | | INCH DIMENSIONS | | |
| TRACED | APPROVED | MILLIMETRES | DECIMAL TO 3 PLACES ± .005 | | |
| | | | DECIMAL TO 2 PLACES ± .010 | | |
| | | SCALE | FRACTIONAL ± 1/64 | | FINISH |
| DATE | DATE | 2:1 | METRIC DIMENSIONS | | |
| 27-11-78 | | NOT TO BE SCALED | DECIMAL TO 2 PLACES ± 1mm | | |
| | | | DECIMAL TO 1 PLACE ± 2mm | | |
| | | | WHOLE DIMENSIONS ∓ 4mm | | |
| | | | UNLESS OTHERWISE STATED | | |

J W 1162

| 4 | 5 | 6 |
|---|---|---|
| ALL BURRS TO BE REMOVED | | NOTES |

| ISS. | CHANGES |
|---|---|
| 1 | RELEASED. 27-DEC-78. W.G.S. |
| 2 | POSITION OF TAG ON M1 & M2 CORRECTED. D2 POSITION REVERSED. ECO. 907 20.6.79 IL. |
| 3 | PARTS LIST CHANGE TO R7 ECO. 945 10.9.79 IL. |
| 3.0 | ECO 1984 UPDATED TO ENG. PROC. II IL. 26.3.86 |




SERTED INTO 4
UNDERSIDE OF P.C.B.

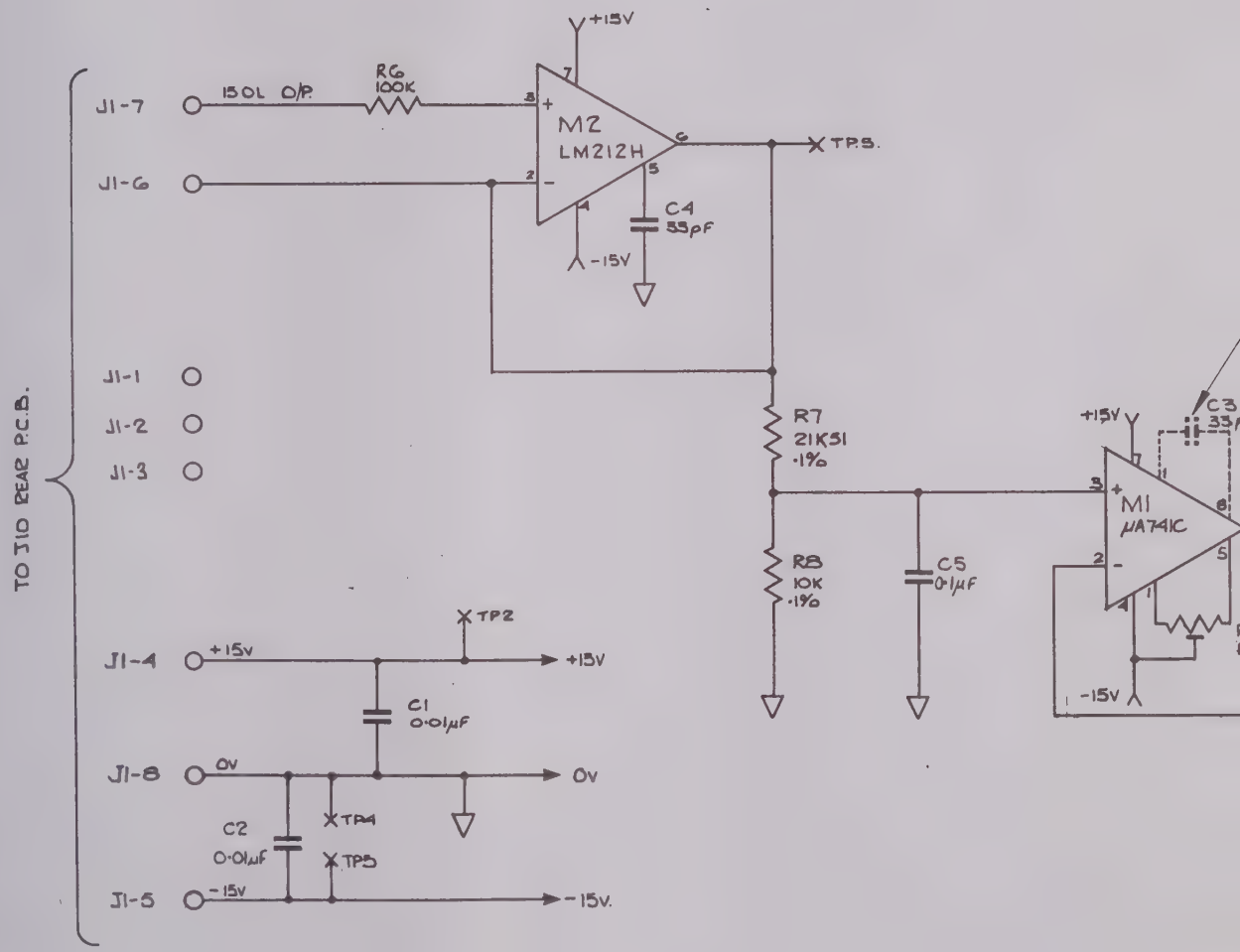
DOFF
F.

| | | | |
|---|---|---|---|
| datron ELECTRONICS LTD. NORWICH. | | | DRAWING SIZE A2 |
| TITLE ANALOGUE OUTPUT P.C.B ASSY. 1061/1071/1081 | | DRAWING No. 480308 | SHEET 1 OF 1 |

| DRAWING No. | |
|---|---|
| 430308 | |
| FIRST USED ON | |
| 1061 - 1071 | |

# THIRD ANGLE PROJECTION

DRAWN IN ACCORDANCE WITH BS 308



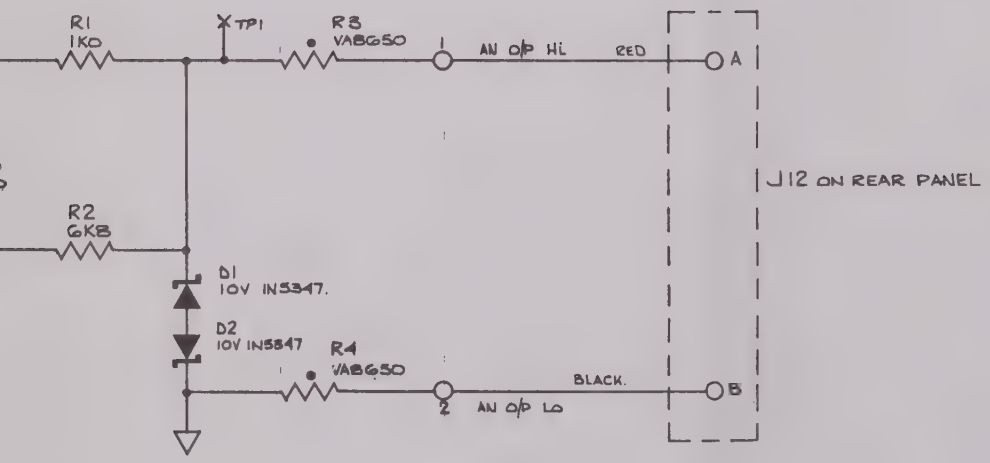

| DRAWN | CHECKED | DIMENSIONS IN | TOLERANCES ANGULAR ± ½° | MATERIAL |
|---|---|---|---|---|
| B.J. | | MILLIMETRES | INCH DIMENSIONS<br>DECIMAL TO 3 PLACES ± .005<br>DECIMAL TO 2 PLACES ± .010<br>FRACTIONAL ± 1/64 | |
| TRACED | APPROVED | SCALE | METRIC DIMENSIONS<br>DECIMAL TO 2 PLACES ± 1mm<br>DECIMAL TO 1 PLACE ± 2mm<br>WHOLE DIMENSIONS ± 4mm | FINISH |
| DATE 29-11-78 | DATE | NOT TO BE SCALED | UNLESS OTHERWISE STATED | |

J W 1162

| 4 | 5 | 6 |
|---|---|---|
| BURRS TO BE REMOVED | | NOTES |

| ISS. | CHANGES |
|---|---|
| 1 | RELEASED. 27-DEC-78. W.O.S. |
| 2 | R7 WAS 21k73 ECO. 945 10.9.79 IL BJ |
| 3.0 | ECO 1984 UPDATED TO ENG. PROC. II IL 26.3.86 MP |

C3 ONLY FITTED WHEN MI. ALTERNATIVE (TYPE 101) IS USED




datron ELECTRONICS LTD. NORWICH.

DRAWING SIZE A2

| TITLE | DRAWING No. | SHEET |
|---|---|---|
| ANALOGUE OUTPUT CIRCUIT. 1061/1071/1081 | 430308 | 1 OF 1 |

DRAWING No.
400328
FIRST USED ON
1061

# THIRD ANGLE PROJECTION

DRAWN IN ACCORDANCE WITH BS 308

WIRE/TERMINAL ASSY 400379/1 7 OFF.

40 OFF RED SOCKET CLIPS PART No GOG005

MOUNT ALL OTHER IC'S IN 16 WAY DIL SOCKETS

TEST POINT TERMINAL 620007 25 OFF.

ALL LINKS AND TEST POINTS USE TINNED COPPER WIRE — PART No 540002

NOTE :-
FIT E90G AS SHOWN ON DIAG.
FIT TCR506 AS SHOWN WITH FLAT ON THE LEFT.

TCR 506

● NYLATCH - GROMMET 617011 - 8 OFF

⊕ NYLATCH - PLUNGER 617010 - 8 OFF
N.B. FIT FROM COMPONENT SIDE OF PCB.

SECTION A-A

THIS NYLATCH MUST BE FITTED AFTER ATE.

F.S.V. TERMINAL PART No 602001 6 OFF.

COLOUR DOTS TO BE ON TOP

3mm APPROX.

PCB 410095-8A

LOOP D35 & D60 LEADS AS ABOVE.

MOUNT M22, M35, Q35, Q36 AND Q37 ON 8 WAY DIL SOCKET No 605059-5 OFF

ENSURE THAT ALL RESISTORS MARKED * ARE MOUNTED 3mm OFF PCB

10 OFF UNSLEEVED LINKS A, B, C, D & E. FIT LINKS D & C AFTER ATE.

CLOVERLEAF TERMINALS PART No 620005 7 OFF.

TO SOLDER TERMINAL A WIRE LENGTH 25 mm

TO STANDOFF PIN AT B. WIRE LENGTH 35 mm

TO STANDOFF PIN AT C. WIRE LENGTH 35 mm

WIRE 25 mm LONG JOINING THESE TERMINALS TOGETHER SLEEVED (AS SHOWN)

TO SOLDER TERMINAL E. WIRE LENGTH 40 mm

SLEEVE ALL JOINTS WITH 1/2 PIECE OF 620000

NOTE !
ALL RELAY WIRES USE 7/2 PTFE INSULATED WHITE 540008 STRIP 5mm FROM EACH END.

| DRAWN | CHECKED | DIMENSIONS IN | TOLERANCES |
|---|---|---|---|
| B.J. | D.H. | MILLIMETRES | INCH DIMS |
| TRACED | APPROVED | SCALE 2:1 NOT TO BE SCALED | METRIC DIMS |
| DATE 12-7-78 | DATE | | UNLESS OTH |

4 | 5 | 6 | 7

ALL BURRS TO BE REMOVED

## NOTES

1. SOLDER PCB TERMINAL LUG PART Nº 620003. 5 OFF SHOWN AS ⊗
2. FIX RELAY BRACKET 459112 TO PCB WITH SCREW M3X6mm POZI-PAN G11004. 1 OFF. SHAKE PROOF WASHER G13005. 1 OFF NUT M3 FULL HEX STEEL G15002. 1 OFF.

NOTE ALL TEST LINKS TO BE AS TEST POINTS.

1 OFF 16 WAY RIBBON CABLE ASSY PART NO 871075/C SOLDER END WITHOUT CABLE CLIP TO P.C.B.

MOUNT M12, M16, M17, M18, M19, M26, M27, M29 ON 14 WAY DIL SOCKETS 605C60. 8 OFF

1mm PTFE SLEEVING 530004

6 OFF CERAMIC BEADS PART NO 630036

30mm 7/2 PTFE WIRE 540008. NOT FITTED WITH LARGE ALTERNATIVE RESISTORS - SEE BELOW.

REMOVE THIS RELAY PIN AND MOUNT RELAY ABOVE PCB SO THAT STUD DOES NOT MAKE CONTACT.

WIRE/TERMINAL ASSY 400379/2 4 OFF

1 OFF NUT G15005

1 OFF WASHER M3 INT SHAKEPROF. G13014

J6 (1) BOTTOM TERMINAL OF RELAY INTO HOLE IN PCB WITH TINNED COPPER WIRE. 540002

J6 -- 8 WAY POLARISED SOCKET 605082 - 2 OFF.

VIEW SHOWING POSITION FOR LARGE ALTERNATIVE RESISTORS.

| ISS. | CHANGE |
|---|---|
| 24 | ECO 1459 DT3:DT4:R242 ADDED RF 19.3.84 |

| ISS. | CHANGES |
|---|---|
| A | |
| B | UPDATED PCB. |
| 1 | RELEASED TO PRODN 23-11-79 |
| 2 | R46 WAS 10K (400008) NOW 12K8 (400012). C30(22) WAS 100P (400020) NOT WAS 140P (280008) ECO 807 26-12-79 M.B.E. |
| 3 | COMPONENT VALUES CHANGED. REFER TO ECO 836 & ECO 854. 6.4.79 J.L. |
| 4 | COMPONENT VALUES CHANGED. REFER TO ECO 883. 23-4-79. B.J. |
| 5 | D37 REMOVED & PTS. LT CHANGE TO R24. ECO 886/890/904 IL. 19.6.79 |
| 6 | ECO 925. D40 WAS SOON RE-INSTATED. B.J. 16-7-79. |
| 7 | ECO.937 PCB. RAISED To 1966.6A IL. 4.9.79 |
| 8 | ECO. 959 C59 ADDED ACROSS M16-8 & M18-14 IL. 20.8.79 |
| 9 | ECO 963, 972 & 984. C30 REMOVED. & CHANGED TO R182, R183, C34, C35, M32 & ELI B.J. 12-10-79 |
| 10 | ECO 987, 989 & 997. RELAY WIRES WERE PVC INSULATED. R57 WAS 47R R127 WAS 10M R219, 220, 221 & 222 WERE 1M (633.1) R227 & C60 ADDED B.J. 20-11-79 |
| 11 | ECO 1000 SOCKET CLIP 606006 WAS 606007 IL 9.1.80 |
| 12 | ECO. 1043 1072, 1077 PARTS LIST CHANGES IL 27.2.80 |
| 13 | ECO.1098, 1107 CLOVERLEAFS WERE 16 OFF. D58 REMOVED & REPLACED BY LK3 R217, C59 LINKS P1 & 'G' DELETED. PARTS LIST CHANGES IL 16.4.80 |
| 14 | ECO.1050, 1117, 1188 PARTS LIST CHANGES C8 RELOCATED. D69 ADDED. R41/R88 DELETED. IL 2.6.80 |
| 15 | ECO. 1168, 1144 Q35 Q36 WERE 2N3856 R18, R35, R36, Q24 Q25 ADDED. IL 24.9.80 |
| 16 | ECO. 814, 1182, 1184, 1186 1190, 1191, 1192, 1193 Q35 Q36 NOW MOUNT ON DIL SOCKET 606 SOFT R236, R237 ADDED. WIRE TERMINAL /38 TO J4-7 WAS FITTED TO J4-8. TRACK FROM WIRE ON J4-7 WAS J4 ON PCB CUT ON COMP. SIDE. LK21 ADDED. FURTHER PARTS LIST CHANGES. IL 18.12.80 |
| 17 | ECO 1217 J3 WAS 14 WAY SOCKET. UK 14-8-81 |
| 18 | ECO.1244, 1248 PARTS LIST CHANGES IL 2.11.81 |
| 19 | ECO 1245, 1273 R17 WAS 2200Ω UK 5-1-82 R17 |
| 20 | ECO 1282. PCB WAS 1551 B4. R122 WAS 3300Ω. R136 WAS 2.2E. C38 WAS 4.7 PF. R23 WAS 2.2M. R26 WAS 2.2MR. R27 WAS 680R. M22 WAS CAN TYPE R233, 234, 238, 239, 239, 224, 228, 229, 231, D71, D72, C64, Q STAND 1 HARWIN PIN ADDED. 3 CLOVERLEAVES DELETED. UK 22.7.82. |
| 21 | ECO 1460 R240 ADDED IL 25.5.83 |
| 22 | ECO 1512 R241 ADDED. UK 17-8-83 |
| 23 | ECO 1845, 1849. PCB was 1661 R1NE : R1V ONLY R36 : 2.2MΩ R1 : 680Ω WIRE NOT MOUNTED |

ANGULAR ± ½

MATERIAL

FINISH

datron ELECTRONICS LTD. NORWICH.

TITLE: 1061 ANALOGUE PCB ASSEMBLY

DRAWING SIZE: A1

DRAWING No. 400328

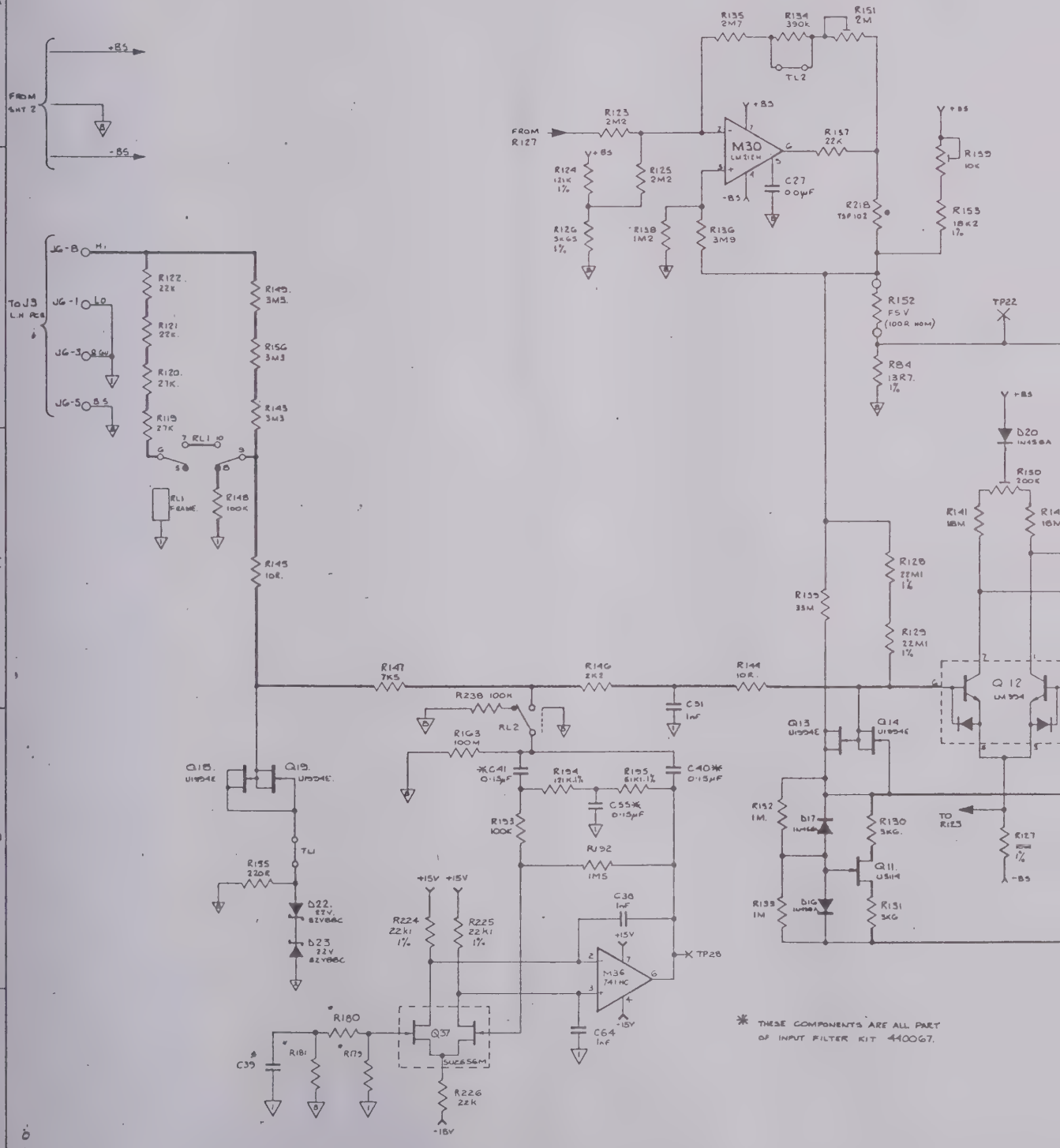
SHEET 1 OF 24

DRAWING No 430328

FIRST USED ON 1061

# THIRD ANGLE PROJECTION

DRAWN IN ACCORDANCE WITH BS 308




* THESE COMPONENTS ARE ALL PART OF INPUT FILTER KIT 440067.

| | | | |
|---|---|---|---|
| DRAWN BJ | CHECKED | DIMENSIONS IN MILLIMETRES | TOLERANCES ANGULAR ± ° INCH DIMENSIONS DECIMAL TO 3 PLACES ± .005 DECIMAL TO 2 PLACES ± .010 FRACTIONAL ± 1/64 METRIC DIMENSIONS DECIMAL TO 2 PLACES ± 1mm DECIMAL TO 1 PLACE ± 2mm WHOLE DIMENSIONS ± 4mm UNLESS OTHERWISE STATED |
| TRACED | APPROVED | SCALE NOT TO BE SCALED | |
| DATE 9-4-79 | DATE | | |

5 | 6 | 7

ALL BURRS TO BE REMOVED

## NOTES

= SIGNAL COMMONS

= ANALOGUE COMMON

| ISS. | CHANGES | |
|---|---|---|
| 3 | RE-DRAWN 13-4-79. ECO 816, 834 & 835 B.J. | MD |
| 4 | SEE SHEETS 2 & 3 | MD |
| 5 | SEE SHEET 5 | MD |
| 6 | ECO.558 SEE SHT. 5 IL 20.8.79 | MD |
| 7 | ECO 365 M36 WAS MA714. ECO 586 C30 DELETED. B.J. 12-10-79. | MD |
| 8 | ECO 3856 857. B.J. R187 WAS 10M (SHT 1) R220, 221 & 222 WERE 1M (SHT 4) RZ19 WAS 1M RS7 = 47R C60 ADDED (SHT 3) R227 = 30-10-79 | MD |
| 9 | ECO.1049. R123 WAS 2M37 1% R125 WAS 2M37 1% R134 WAS 470K R135 WAS 3M92 1% R136 WAS 4M75 1% R138 WAS 1M82 1% IL 27.2.80 | MD |
| 10 | ECO.1098 R217 & LINK 'G' DELETED. IL 16.4.80 | MD |
| 11 | ECO. 1050, 1117, 1128 SEE SHTS 2, 3 & 4. IL 2.6.80 | MD |
| 12 | ECO.1168 SEE SHEET 3. IL 23.9.80 | MD |
| 13 | ECO.1184, 1188, 1191, 1190, 1192 J1-8 WAS 6u. J1-7 ADDED (ADG). R150 WAS 100k. SEE ALSO SHTS 2 & 5. IL 16.12.80 | MD |
| 14 | ECO.1244, 1248 SEE SHEETS 3 & 4 IL 3.11.81 | MD |
| 15 | ECO 1273 R127 WAS A CR68 IL 7-1-82 | MD |
| 16 | ECO 1282 R224, R225, R226 R233, R238, C64 AND Q37 ADDED. M36 WAS 212. TL8 WAS TP13. JPA 23-7-82 | MD |
| 17 | ECO. 1460 R240 ADDED, SHT 2 IL 25.5.83 | MD |
| 18 | ECO 1512 R241 ADDED. JPA 17-8-83 | MD |
| 19 | SEE SHEET 2. | MD |
| 20 | ECO 1659 D73 ADDED AP. 19.9.84 | MD |

FROM SHT 5: SCL CLK → J1-1; ADA → J1-2; FROM Q7 ISOL O/P → J1-4; ADG → J1-7; TP1 → J1-5; +15V; C1 10μF 25V; TO J5-12 SHT 3 OV; MECCA; TP10; TP21; J1-9; D73 TVS S15; C2 10μF 25V; -15V; TP2; J1-6; J1-8. TO J4 CENTRE PCB.

C42 0.1μF; M3 741HC; D35 IN4584; R241 330R; 33 1K; M23 (DATRON) 2200-15; R138 10K 1%; -15V; -8V; Ib COMP → ANZ-1 SHT 5

M31 LF411; C29 47pF; C28 47pF; TP13; D18 6V8 BZY88C; D15 6V8 BZY88C; Q16 U1994E; Q15 U1994E; TP14; R142 2K7

Q8 U1114; R116 1M; FROM D28 SHT 2; R108 10K 0H1; R109 10K 0H1; R114 2M21 1%; R112 6K8; TO J1-4; Q9 U1114; R117 1M; FROM D29 SHT 2; Q7 U1114; TL8; ISOL O/P R34 SHT 3; FROM D26 SHT 2; C58 3300pF; Q10 U1114; R118 1M; FROM D30 SHT 2; R110 9K; R115 1M 1%; Q6 U1114; R113 1M; FROM D25 SHT 2; R111 1K; Q5 U1114; +15V; R96 M1K 1%; R95 20M; D11 IN4584A; TP17; M20-3 SHT. 5; TO R154 SHT 2

AL

datron ELECTRONICS LTD. NORWICH.

DRAWING SIZE A1

TITLE: DC ISOLATOR 1001.

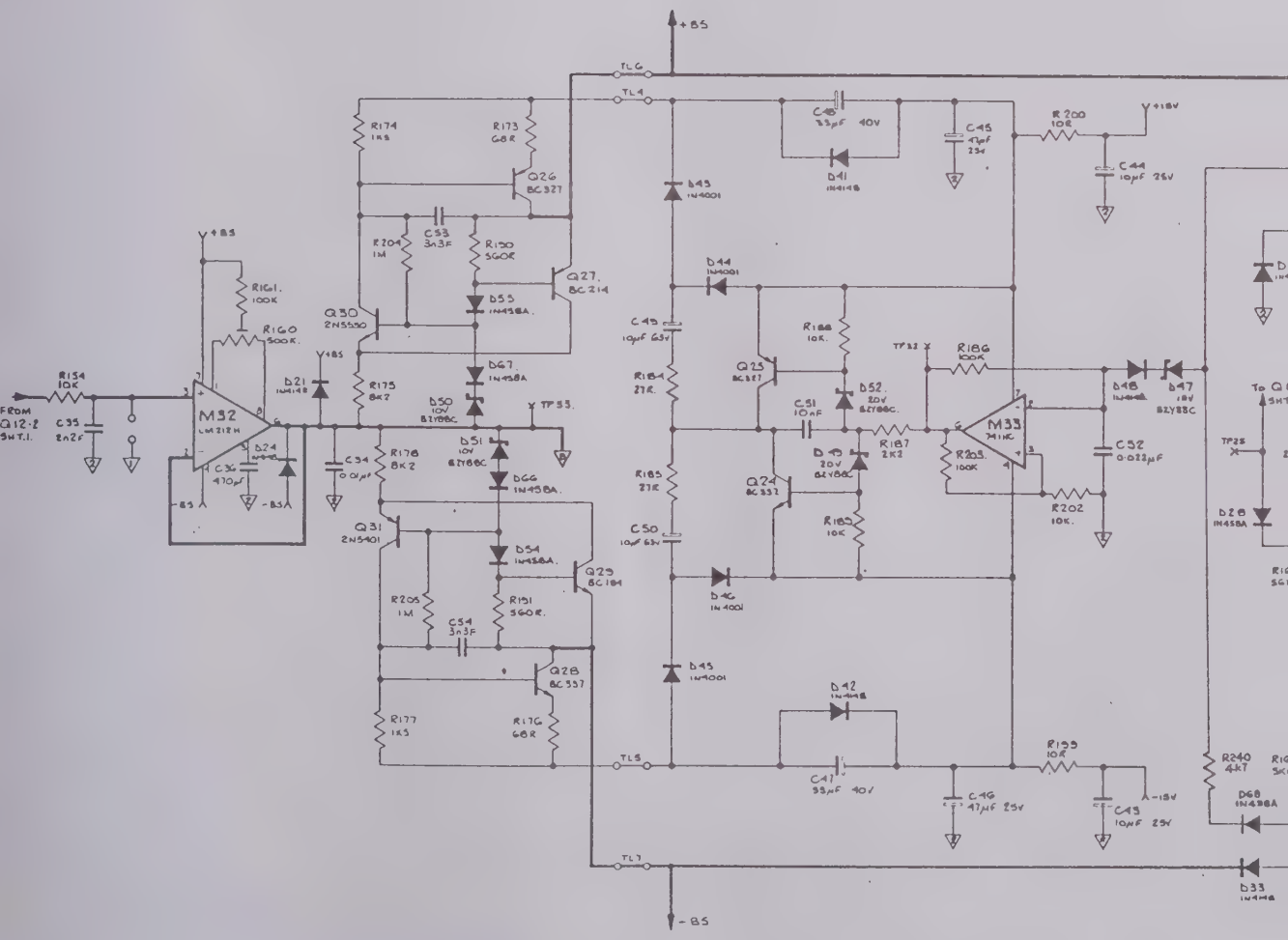
DRAWING No 430328.

SHEET 1 OF 5

| DRAWING No |
| --- |
| 430328 |
| FIRST USED ON |
| 1061. |

# THIRD ANGLE PROJECTION

DRAWN IN ACCORDANCE WITH BS 308




| DRAWN | CHECKED | DIMENSIONS IN | TOLERANCES | ANGULAR ± ° |
| --- | --- | --- | --- | --- |
| B J | | MILLIMETRES | INCH DIMENSIONS | |
| TRACED | APPROVED | | DECIMAL TO 3 PLACES ± .005 | |
| | | SCALE | DECIMAL TO 2 PLACES ± .010 | |
| DATE 17-4-79 | DATE | | FRACTIONAL ± 1/64 | |
| | | NOT TO BE SCALED | METRIC DIMENSIONS | |
| | | | DECIMAL TO 2 PLACES ± 1mm | |
| | | | DECIMAL TO 1 PLACE ± 2mm | |
| | | | WHOLE DIMENSIONS ± 4mm | |
| | | | UNLESS OTHERWISE STATED | |

5 | 6 | 7

ALL BURRS TO BE REMOVED

## NOTES

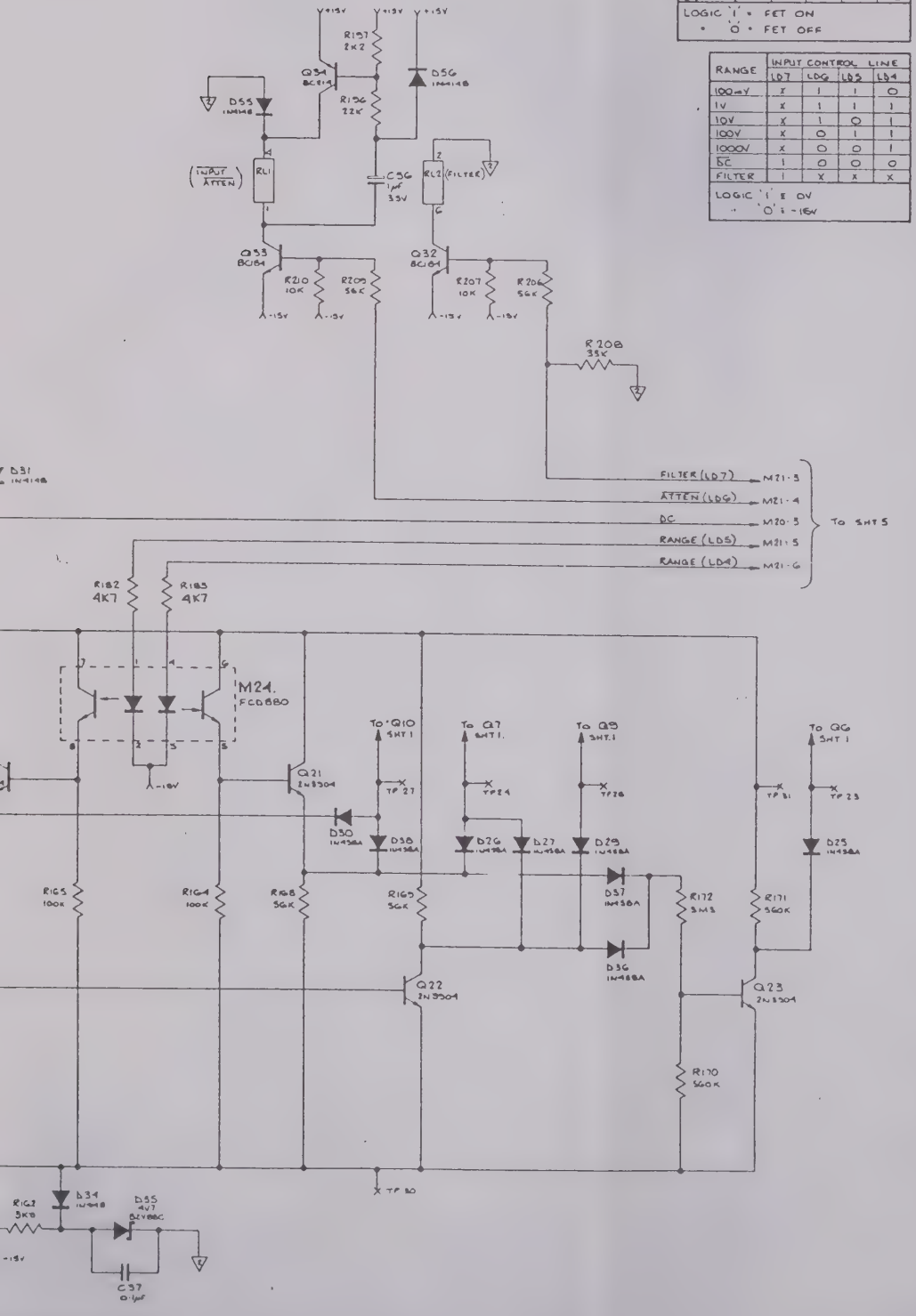
| RANGE | FET CONTROL LINE | | | | |
|---|---|---|---|---|---|
| | TP 23 | TP 24 | TP 25 | TP 26 | TP 27 |
| 100 mV | 1 | 0 | 1 | 0 | 0 |
| 1V | 0 | 0 | 1 | 0 | 1 |
| 10V | 0 | 1 | 0 | 1 | 0 |
| 100V | 0 | 0 | 1 | 0 | 1 |
| 1000V | 0 | 1 | 0 | 1 | 0 |
| DC | 0 | 0 | 0 | 1 | 0 |

LOGIC '1' = FET ON
" '0' = FET OFF

| RANGE | INPUT CONTROL LINE | | | |
|---|---|---|---|---|
| | LD7 | LD6 | LD5 | LD4 |
| 100 mV | X | 1 | 1 | 0 |
| 1V | X | 1 | 1 | 1 |
| 10V | X | 1 | 0 | 1 |
| 100V | X | 0 | 1 | 1 |
| 1000V | X | 0 | 0 | 1 |
| DC | 1 | 0 | 0 | 0 |
| FILTER | 1 | X | X | X |

LOGIC '1' = 0V
" '0' = -15V

| ISS. | CHANGES | |
|---|---|---|
| 3 | RE-DRAWN 13-4-79. ECO 826, B34 & B.J ECO 853 | MD |
| 4 | D57 DELETED. IL ECO.886 20.6.79 | MD |
| 5 | SEE SHEET 5. | MD |
| 6 | SEE SHEET 3 | MD |
| 7 | ECO 963. R182 4 183 WERE 10K. BJ 12-10-79. | MD |
| 8 | ECO 985 & 997. B.J SEE SHEET 1. 30-10-79 | MD |
| 9 | ECO.1072 CS1 WAS 2n2F CS3 CS4 WERE 10nF IL 27.2.80 | MD |
| 10 | SEE SHEETS 1, 3 & 5 IL 16.4.80 | MD |
| 11 | ECO.1117 D68 ADDED. IL 2.6.80 | MD |
| 12 | SEE SHEET 3 | MD |
| 13 | SEE SHEETS 1, 3 & 4 | MD |
| 14 | SEE SHEETS 3 & 4 | MD |
| 15 | ECO 1273 SEE SHEET 1 JK 7-1-82 | MD |
| 16 | ECO1281 | MD |
| 17 | ECO.1460 R240 ADDED IL 25.5.83 | MD |
| 18 | SEE SHEET 1 | MD |
| 19 | ECO 1645. Q30 WAS 2N3904 Q31 WAS 2N3906 BJ. 14th JUNE 84. | MD |
| 20 | SEE SHTS 1&5 | MD |




AL

datron ELECTRONICS LTD. NORWICH.

DRAWING SIZE A1

TITLE: BOOT STRAPPED SUPPLIES & RANGE LOGIC 1081

DRAWING No 430328

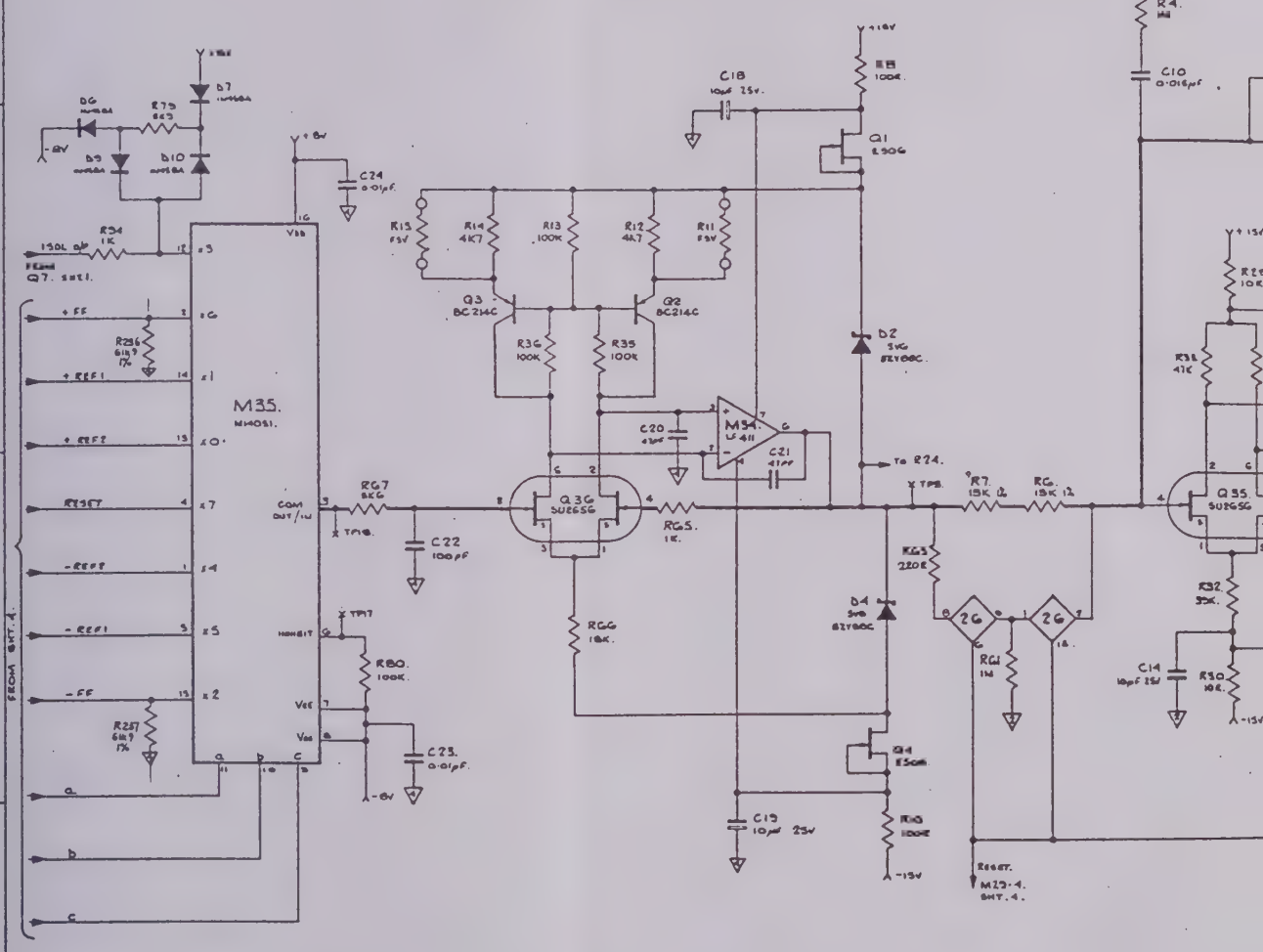
SHEET 2 OF 5

DRAWING No
430328

FIRST USED ON
1061

# THIRD ANGLE PROJECTION

DRAWN IN ACCORDANCE WITH BS 308




| Condition. | MULTIPLEXER a | b | c | RESET |
|---|---|---|---|---|
| RESET. | 1 | 1 | 1 | 1 |
| SIG. | 1 | 1 | 0 | 0 |
| -Ve BIAS. | 0 | 1 | 0 | 0 |
| +Ve REF 1. | 1 | 0 | 0 | 0 |
| +Ve REF 2. | 0 | 0 | 0 | 0 |
| +Ve BIAS. | 0 | 1 | 1 | 0 |
| -Ve REF 1. | 1 | 0 | 1 | 0 |
| -Ve REF 2. | 0 | 0 | 1 | 0 |

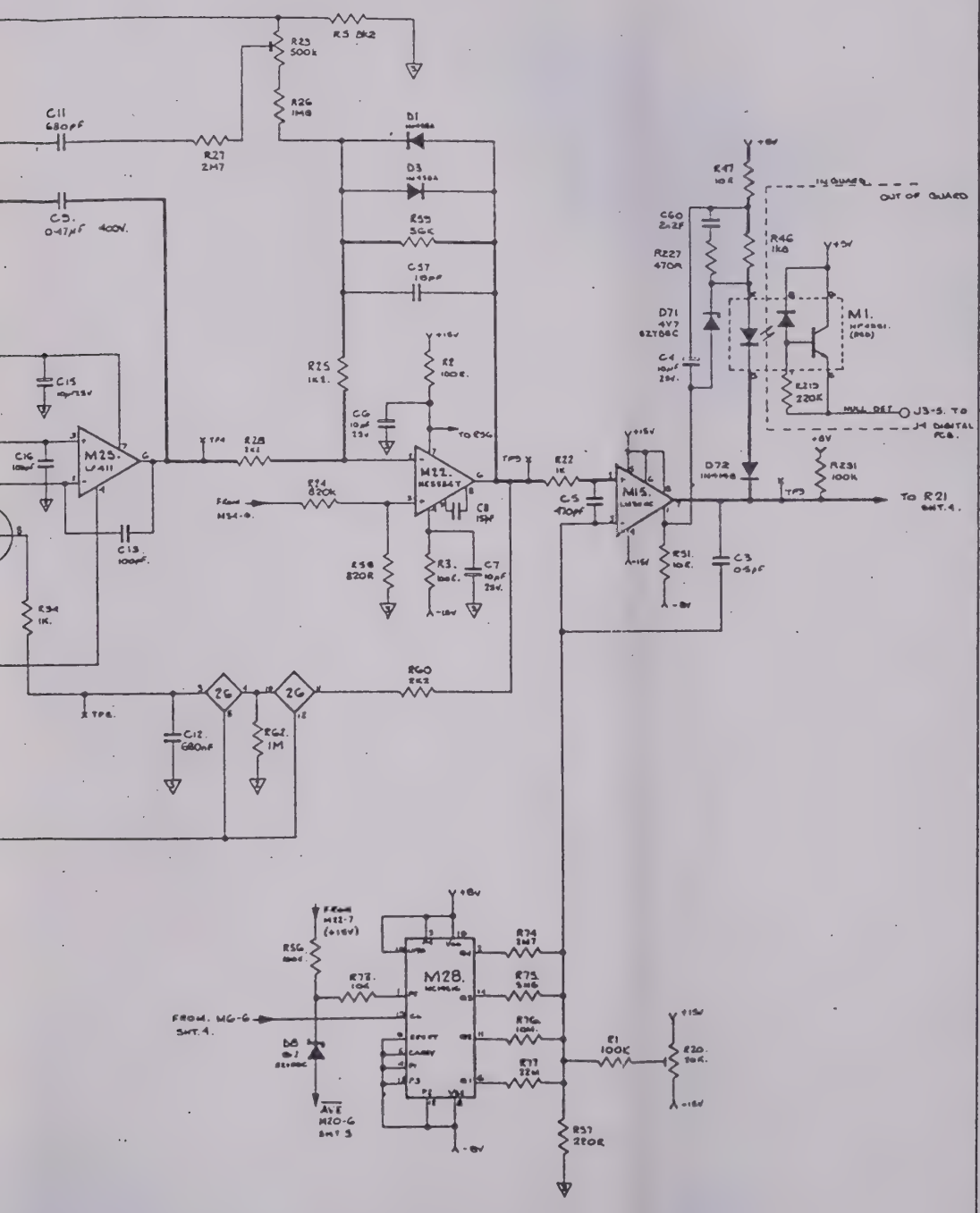
| | | | |
|---|---|---|---|
| DRAWN E J | CHECKED | DIMENSIONS IN MILLIMETRES | TOLERANCES ANGULA<br>INCH DIMENSIONS<br>DECIMAL TO 3 PLACES ± .005<br>DECIMAL TO 2 PLACES ± .010<br>FRACTIONAL ± 1/64<br>METRIC DIMENSIONS<br>DECIMAL TO 2 PLACES ± 1mm<br>DECIMAL TO 1 PLACE ± 2mm<br>WHOLE DIMENSIONS ± 4mm<br>UNLESS OTHERWISE STATED |
| TRACED | APPROVED | SCALE NOT TO BE SCALED | |
| DATE 11-4-75 | DATE | | |

5 | 6 | 7

ALL BURRS TO BE REMOVED

NOTES

| ISS. | CHANGES |
|---|---|
| 3 | RE. DRAWN 13-4-79 ECO 826, 834 & 833 |
| 4 | R26 WAS 820k ECO. 910. 20.6.79 |
| 5 | SEE SHEET 3. |
| 6 | SEE SHEET 5 |
| 7 | SEE SHEET 1 & 2 |
| 8 | ECO 989 & 997. SEE SHT. 1. 30-10-79 |
| 9 | SEE SHEETS 1 & 2 |
| 10 | ECO. 1098 Q35 Q36 WERE SU2536M. R46 WAS 1K5. DS8 DELETED & REPLACED WITH LK3. 16.4.80 |
| 11 | ECO. 1050. R58 WAS 1k. C8 WAS ACROSS R34. C11 WAS 1nF. C37 WAS 68pF. M22 WAS LF356H. 2.6.80 |
| 12 | Q35 & Q36 WERE 2N3856 R4 WAS 10M R5 WAS 18k R12 & R14 WERE 8K6 R13 & R35 WERE ADDED. R36 R26 WAS 680k C12 WAS 0·47µF. Q29 Q3 ADDED. LK1 & LK2 REMOVED. 23.9.80 |
| 13 | R236 & R237 ADDED RS7 WAS 200R 16.12.80 |
| 14 | M1 NOW SELECTED SEE ALSO SHT. 4 3.11.81 |
| 15 | ECO 1273 SEE SHEET 1 7·1·82 |
| 16 | ECO 1282 R231, D71, D72 ADDED. R26 WAS 2M2 R27 WAS 820k JR 23·7·82. |
| 17 | SEE SHEET 2 |
| 18 | SEE SHEET 1 |
| 19 | SEE SHEET 2. |
| 20 | SEE SHTS 1&5 |



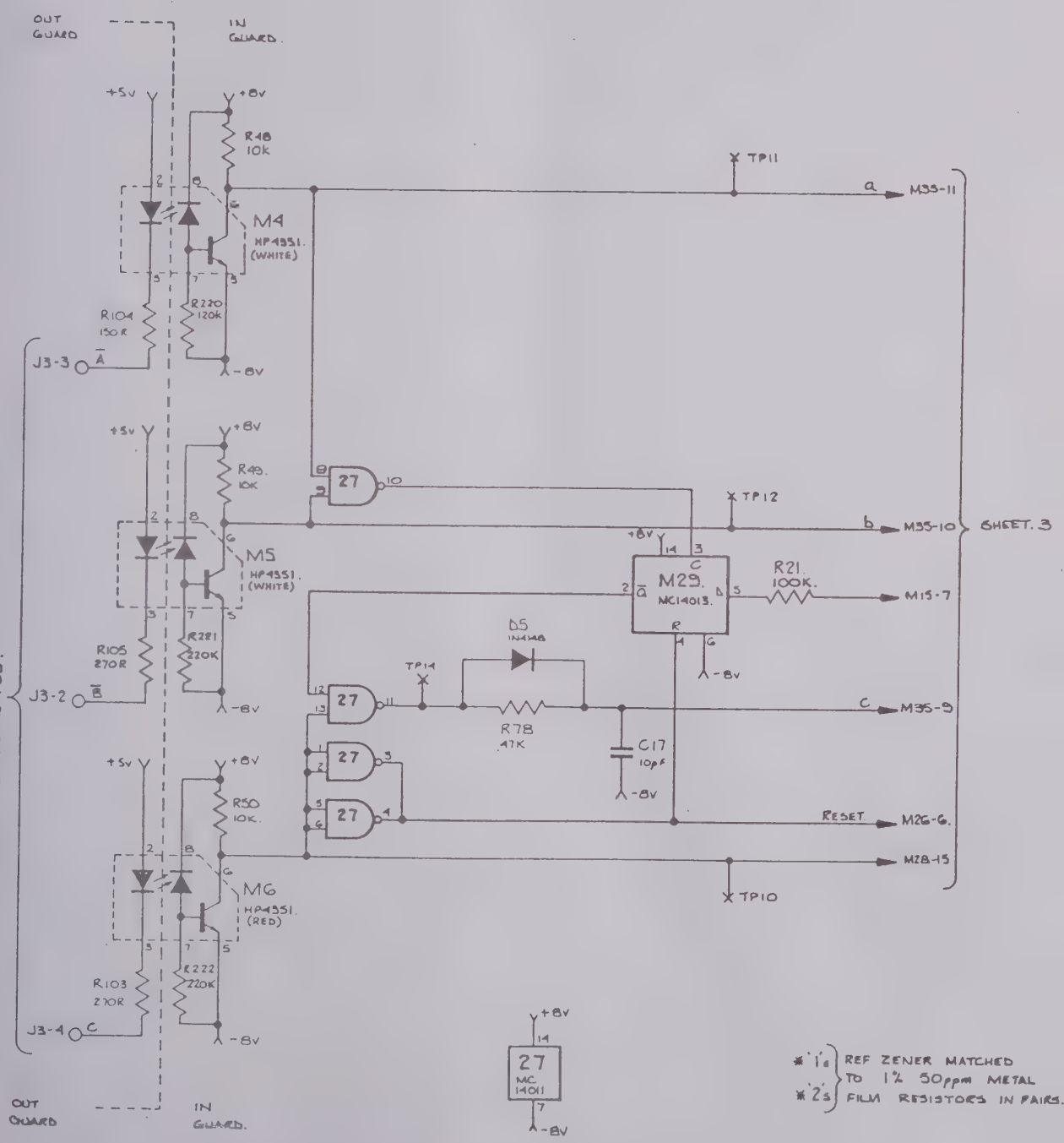

| MATERIAL | | DRAWING SIZE |
|---|---|---|
| | datron ELECTRONICS LTD. NORWICH. | A1 |
| FINISH | TITLE | DRAWING No. / SHEET |
| | A-D CONVERTOR . 1081 | 430328 / 3 of 5 |

DRAWING No. 430328

FIRST USED ON 1061

# THIRD ANGLE PROJECTION

DRAWN IN ACCORDANCE WITH BS 308

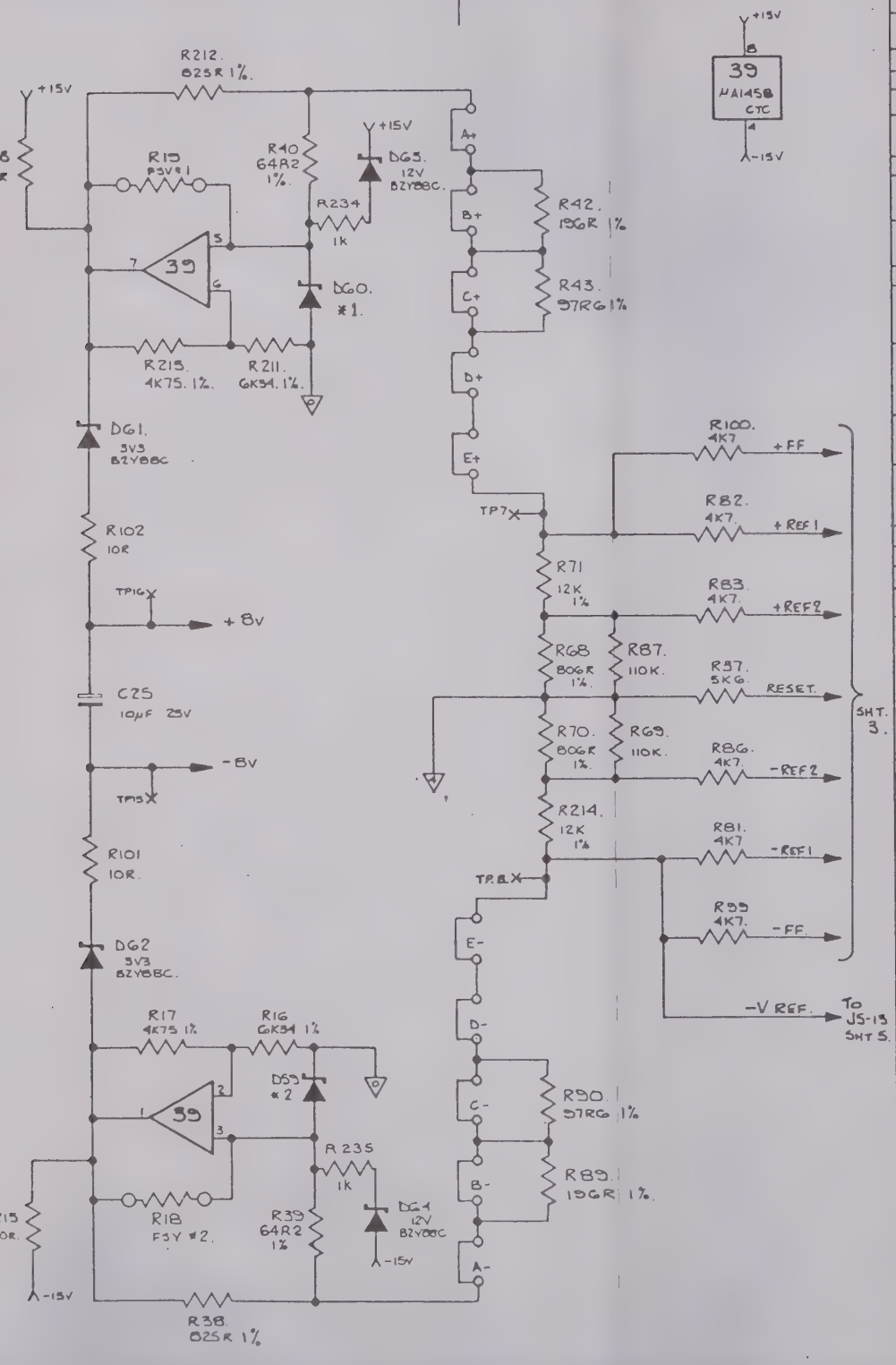



| | | | | |
|---|---|---|---|---|
| DRAWN B J. | CHECKED | DIMENSIONS IN MILLIMETRES | TOLERANCES ANGULAR ± ½° INCH DIMENSIONS DECIMAL TO 3 PLACES ± .005 DECIMAL TO 2 PLACES ± .010 FRACTIONAL ± 1/64 METRIC DIMENSIONS DECIMAL TO 2 PLACES ± 1mm DECIMAL TO 1 PLACE ± 2mm WHOLE DIMENSIONS ∓ 4mm UNLESS OTHERWISE STATED | MATERIAL |
| TRACED | APPROVED | SCALE NOT TO BE SCALED | | FINISH |
| DATE 6-4-79 | DATE | | | |

4 | 5 | 6

URRS TO BE REMOVED

NOTES




| ISS. | CHANGES | |
|---|---|---|
| 3 | RE-DRAWN B.J. 13-4-79. ECO 826 834 & ECO 853. | M |
| 4 | SEE SHEETS 2 & 3. | M |
| 5 | SEE SHEET 5. | M |
| 6 | SEE SHEET 5 | M |
| 7 | SEE SHEET 1 & 2 | M |
| 8 | ECO 883 & 887. SEE SHT 1. B.J. 30-10-79 | M |
| 9 | SEE SHEETS 1 & 2 | M |
| 10 | SEE SHEETS 1 3 & 5 IL. 16.4.80 | M |
| 11 | ECO.1128. R41 & R88 DELETED IL. 9.6.80 | M |
| 12 | SEE SHEET 3 | M |
| 13 | R48 WAS 5kG R105 WAS 150R R220 WAS 220k IL. 16.12.80 | M |
| 14 | R39 & R40 WERE 40R2. M4-MG SELECTED. SEE ALSO SHT.3 IL. 3.11.81 | M |
| 15 | ECO 1273 SEE SHEET 1 JR 7·1·82 | M |
| 16 | ECO 1282 R234, R235 ADDED JR 23·7·82 | M |
| 17 | SEE SHEET 2 | M |
| 18 | SEE SHEET 1 | M |
| 19 | SEE SHEET 2. | M |
| 20 | SEE SHTS 1&5 | M |

datron ELECTRONICS LTD. NORWICH.

DRAWING SIZE A2

TITLE A-D CONTROL & REFERENCES. 1061

DRAWING No. 430328

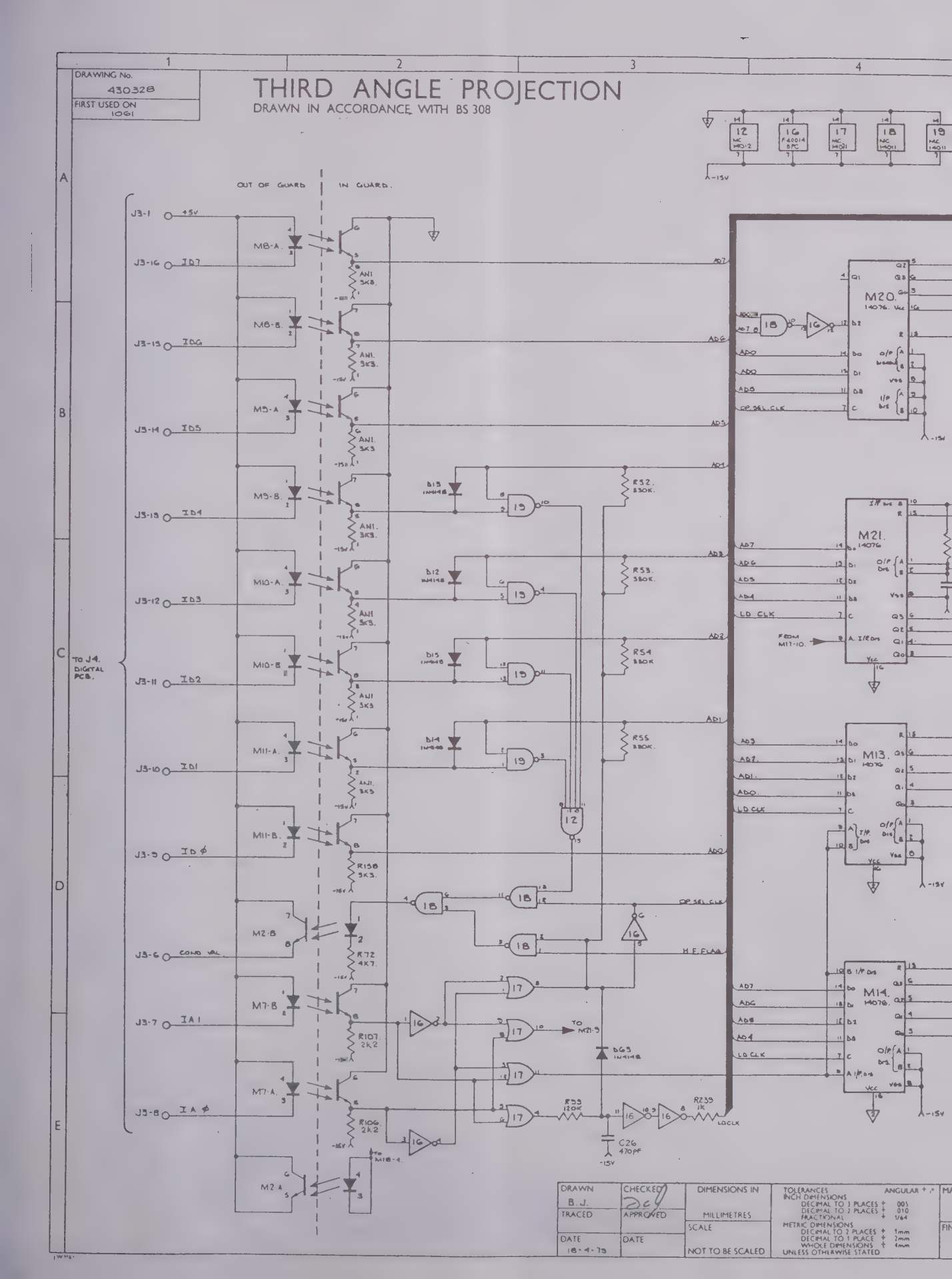
SHEET 4 OF 5

DRAWING No. 430328

FIRST USED ON 1061

# THIRD ANGLE PROJECTION

DRAWN IN ACCORDANCE WITH BS 308




| DRAWN | CHECKED | DIMENSIONS IN | TOLERANCES | ANGULAR + ° |
|---|---|---|---|---|
| B. J. | DC | MILLIMETRES | INCH DIMENSIONS | |
| TRACED | APPROVED | SCALE | DECIMAL TO 3 PLACES + .005 | |
| | | | DECIMAL TO 2 PLACES + .010 | |
| DATE | DATE | NOT TO BE SCALED | FRACTIONAL + 1/64 | |
| 18-4-79 | | | METRIC DIMENSIONS | |
| | | | DECIMAL TO 3 PLACES + 1mm | |
| | | | DECIMAL TO 1 PLACE + 2mm | |
| | | | WHOLE DIMENSIONS + 4mm | |
| | | | UNLESS OTHERWISE STATED | |

5 | 6 | 7

ALL BURRS TO BE REMOVED

NOTES

| ISS. | CHANGES |
|---|---|
| 3 | RE-DRAWN 19-4-79 ECO 826, 8346 B.J. ECO 830. |
| 4 | SEE SHEETS 2+3 |
| 5 | ECO 929. D40 HAS BEEN RE-INSTATED B.J. 16-7-79. |
| 6 | ECO. 959 C59 ADDED ACROSS MIG-8 & MIG-11 IL 20.5.80 |
| 7 | SEE SHEET 1 & 2. |
| 8 | ECO 985 & 997. B.J. SEE SHEET 1. 10-10-80 |
| 9 | SEE SHEETS 1 & 2. |
| 10 | ECO 1098. 1107 LINK 'F' DELETED MIG WAS 14069 C59 DELETED C26 WAS 1nF R83 WAS 100k R106/R107 WERE 3k3 IL 17.4.80 |
| 11 | SEE SHEETS 2+3 |
| 12 | SEE SHEET 3 |
| 13 | SEE SHEETS 1, 3 & 4 |
| 14 | SEE SHEETS 3 & 4 |
| 15 | ECO 1273 SEE SHEET 1 JR 7.1.82 |
| 16 | ECO 1282 R233 ADDED. JR 23.7.82 |
| 17 | SEE SHEET 2 |
| 18 | SEE SHEET 1 |
| 19 | SEE SHEET 2. |
| 20 | ECO 1489 D74: BZ42 ADDED RP 19.9.84 |

To SHT 1

J1-2 & J1-1 OP SEL CLK & LD CLK

TEST → TO D11. SHT.1

AVE. → TO D8. SHT.3

C33 0.1nF

D74 TVS 515

R157 10K.

-15V

12

DC → TO D47

D40

TO SHT 2.

LD4 → TO R183.

LD5 → TO R182.

LD6 → TO R203

LD7 → TO R206

200K

100K

-15V

AN2.

Id comp → TO M3-2. SHT.1.

TL3

R242 10K

J3 connector (To J2. OMNS. PCB):

| | |
|---|---|
| A D0 | J3-1 |
| A D1 | J3-2 |
| A D2 | J3-3 |
| A D3 | J3-4 |
| A D4 | J3-5 |
| A D5 | J3-6 |
| A D6 | J3-7 |
| A D7 | J3-8 |
| OP. SEL. CLK. | J3-9 |
| LD. CLK. | J3-10 |
| | J3-11 |
| R REF COM. | J3-12 |
| -V REF | J3-13 |
| 0V | J3-14 |
| +15V | J3-15 |
| -15V | J3-16 |

To TP8. SHT.4

To J1-3. SHT. 1.

J2 connector (To J1. CURRENT. PCB.):

| | |
|---|---|
| AD0 | J2-1 |
| AD1 | J2-2 |
| AD2 | J2-3 |
| AD3 | J2-4 |
| AD4 | J2-5 |
| AD5 | J2-6 |
| AD6 | J2-7 |
| AD7 | J2-8 |
| OP SEL CLK. | J2-9 |
| LD. CLK. | J2-10 |
| | J2-11 |
| | J2-12 |
| | J2-13 |
| 0V | J2-14 |
| +15V | J2-15 |
| -15V | J2-16 |

J4 connector (To J1 AC. PCB.):

| | |
|---|---|
| HP FLAG. | J4-1 |
| AD0 | J4-2 |
| AD2 | J4-3 |
| AD3 | J4-4 |
| AD4 | J4-5 |
| AD5 | J4-6 |
| AD6 | J4-7 |
| AD7 | J4-8 |
| OP SEL CLK. | J4-9 |
| LD. CLK. | J4-10 |
| HP COMP | J4-11 |
| O/P COM | J4-12 |
| LSDL O/P | J4-13 |
| 0V | J4-14 |
| +15V | J4-16 |
| -15V | J4-16. |

datron ELECTRONICS LTD. NORWICH.

DRAWING SIZE A1

TITLE: ANALOGUE INTERFACE LOGIC 1061

DRAWING No 430328.

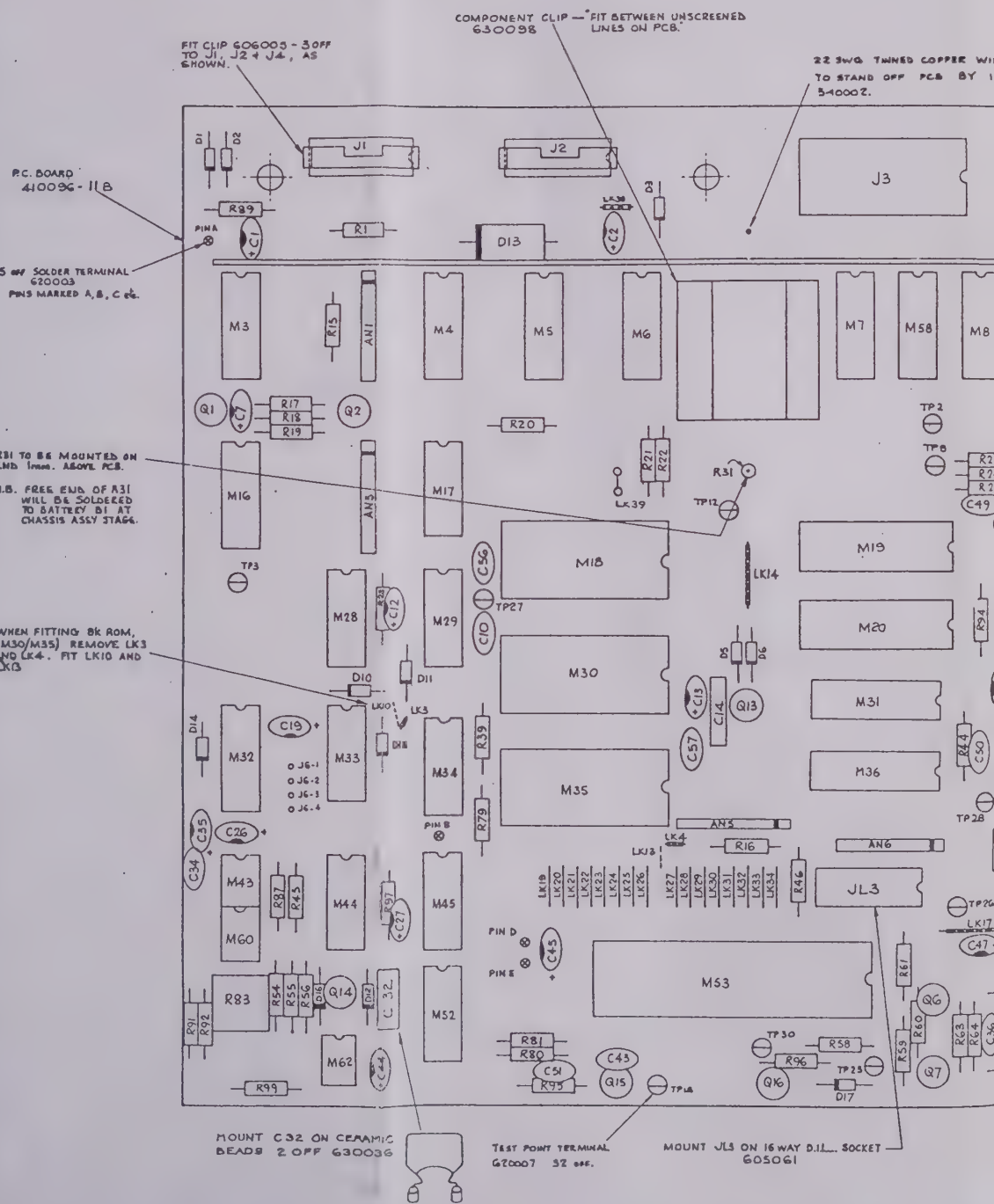
SHEET 5 OF 5

DRAWING No. 400329

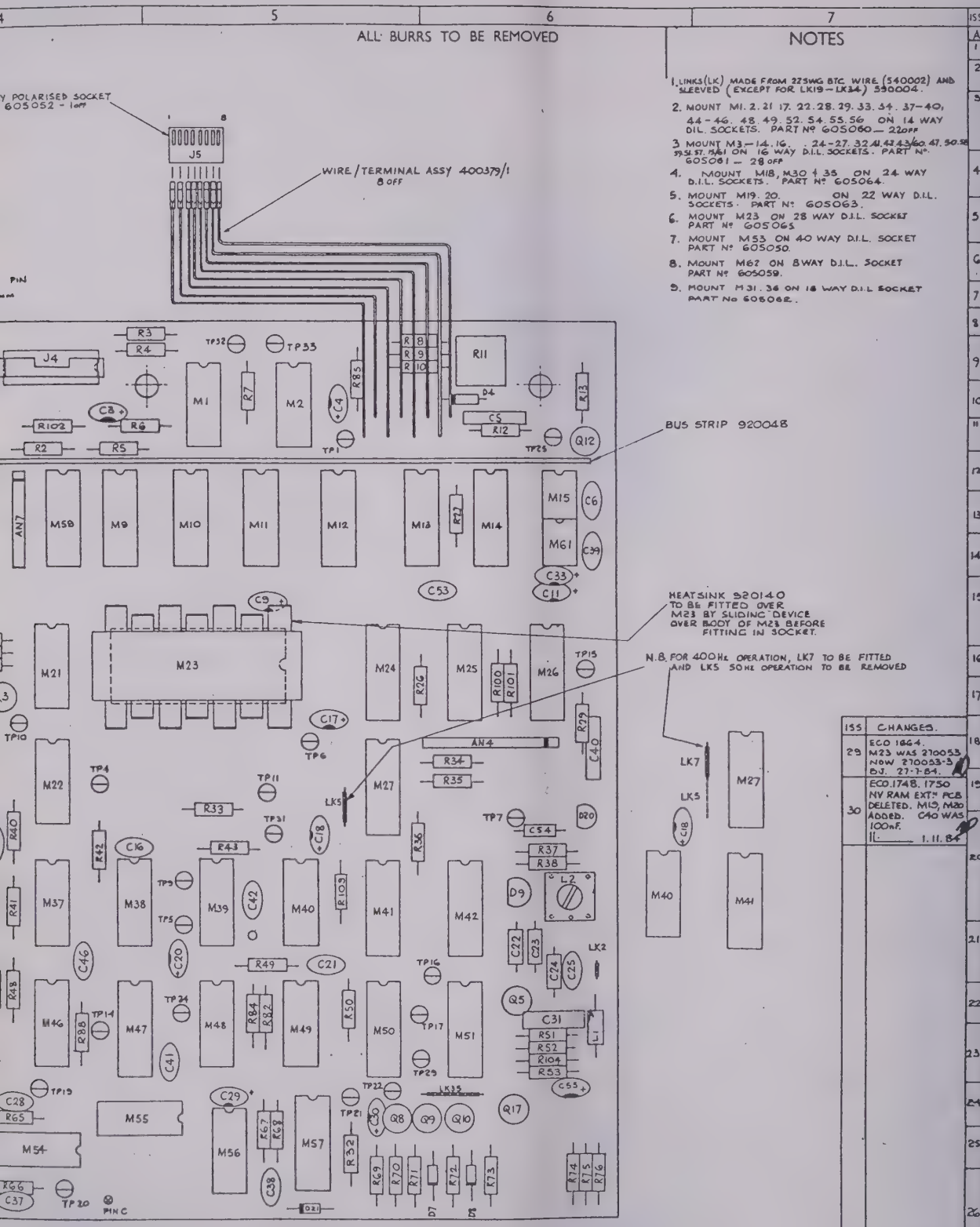
FIRST USED ON 1061

# THIRD ANGLE PROJECTION

DRAWN IN ACCORDANCE WITH BS 308




| DRAWN | CHECKED | DIMENSIONS IN | TOLERANCES |
|---|---|---|---|
| IL. | P.R.H. | MILLIMETRES | INCH DIMENSIONS DECIMAL DECIMAL FRACTIONAL |
| TRACED | APPROVED | SCALE 2:1 | METRIC DIMENSIONS DECIMAL DECIMAL WHOLE UNLESS OTHERWISE |
| DATE 26 6 78 | DATE | NOT TO BE SCALED | |


ALL BURRS TO BE REMOVED
POLARISED SOCKET 605052 - 1 off
J5
WIRE/TERMINAL ASSY 400379/1 8 OFF
BUS STRIP 920048
HEATSINK 920140 TO BE FITTED OVER M23 BY SLIDING DEVICE OVER BODY OF M23 BEFORE FITTING IN SOCKET.
N.B. FOR 400Hz OPERATION, LK7 TO BE FITTED AND LK5 50Hz OPERATION TO BE REMOVED
PIN C

## NOTES

1. LINKS(LK) MADE FROM 22SWG BTC WIRE (540002) AND SLEEVED (EXCEPT FOR LK19–LK34) 590004.
2. MOUNT M1. 2. 21 17. 22. 28. 29. 33. 34. 37–40, 44–46. 48 49. 52. 54. 55. 56 ON 14 WAY DIL. SOCKETS. PART Nº 605060 — 22 OFF
3. MOUNT M3–14. 16. 24–27. 32 41. 42 43/60. 47. 50. 52 53. 54. 57 ON 16 WAY D.I.L. SOCKETS. PART Nº. 605061 — 28 OFF
4. MOUNT M18, M30 & 35 ON 24 WAY D.I.L. SOCKETS. PART Nº 605064.
5. MOUNT M19. 20. ON 22 WAY D.I.L. SOCKETS. PART Nº 605063.
6. MOUNT M23 ON 28 WAY D.I.L. SOCKET PART Nº 605065
7. MOUNT M53 ON 40 WAY D.I.L. SOCKET PART Nº 605050.
8. MOUNT M62 ON 8WAY D.I.L. SOCKET PART Nº 605059.
9. MOUNT M31. 36 ON 18 WAY D.I.L SOCKET PART No 605062.

| ISS | CHANGES |
|---|---|
| A | |
| 1 | RELEASED TO PROD'N 24 11 78 |
| 2 | ECO 811 4.1.79 ISS 4 PCB UPDATE IL |
| 3 | ECO 815 CAB 100K(101J01) ADDED C25 was 100K(1300G01) C24 was 100n(1300G4 C25 was 47n(1300G1) 29 JAN 79 W.G.S. |
| 4 | ECO. 835/852 ISS.5 PCB UPDATE - SEE ECOs FOR FULL DETAILS. IL 17.4.79 |
| 5 | ECOs 863/872/904 /905/911 /912. PARTS LIST CHANGES IL 19.6 79 |
| 6 | ECO. 928 C53 ADDED. Pts LIST CHANGE to RISS IL 17. 7. 79 |
| 7 | ECO. 941/949 Pts. LIST CHANGE TO R2 IL 4.9.79 |
| 8 | ECOs 939. 941. 948. 1004 Pts LIST CHANGE IL 29.10.79 |
| 9 | ECOs 998. 1000. 1042. 1045. 1049 1056 PCB. UPDATE SEE ECOs FOR FULL DETAILS IL 4. 1. 80 |
| 10 | ECO. 1057 PARTS LIST CHANGE ONLY IL 23.1.80 |
| 11 | ECO 1067 WIRE TERMINAL ASSY 400379/1 ADDED W.G.S. 13-2-80 |
| 12 | ECO. 1046. 1086. 1091. 1092 PCB UPDATED ISS. 7A. PARTS LIST CHANGES. IL 20.3.80 |
| 13 | ECO. 1108 R103 ADDED. PARTS LIST CHANGES IL 18.4.80 |
| 14 | ECO. 1135 R104 ADDED. + PARTS LIST CHANGES IL 19.6.80 |
| 15 | ECO. 1137. 1140. 1142 PARTS LIST CHANGES C32 CONNECTED TO R53 R56. '+' SIGN ADDED TO TANT. CAPS. IL 29.7.80 |
| 16 | ECO. 1147 D21 ADDED IL 30.9.80 |
| 17 | ECO. 1188 R28 WAS 1k - PARTS LIST CHANGE IL 6.1.81 |
| 18 | ECO 1214 PC.B UPDATED TO 8A PARTS LIST CHANGES LK 39 ADDED JR 11-6-81 |
| 19 | ECO.1241 Nº OF 24 WAY SOCKETS WAS 8. IL 4.11.81 |
| 20 | ECO 1281. 1283 & 1243 R36 WAS 100K. R46 WAS 330K. M31, 36 WERE 28 PIN R86 K 4 BIT RAM. PCB WAS 185 8B. LK38 ADDED. J3 WAS 608064 JR 2.12.81 |
| 21 | ECO. 1369 M18 NOW USED - SEE PARTS LIST M30. M35 WERE ISS. B IL 9.5.82 |
| 22 | ECO 1431 C 32 NOW MOUNTED ON CERAMIC BASE JR 16-12-82. |
| 23 | ECO. 1481 EARTH WIRE ADDED. LINK (DIS. COM. LOW IMPEDANCE) BETWEEN BUS STRIP & C56 ADDED IL 31.5.83 |
| 24 | ECO 1513 M18, M20 → M35 WERE 18S 17A. JR 18-8-83. |
| 25 | ECO. 1559 HEATSINK 920140 ADDED TO M23 IL 11.11.83 |
| 26 | ECO 1542 & 1588 C56 & 57 ADDED. EARTH WIRES REMOVED PCB UPDATE SOFTWARE UPDATE NYLATCH REMOVED BJ. 27-2-84. |
| 27 | ECO 1603 M18 M30 & M35 WERE 18S 18 IL 6A 84 |
| 28 | ECO 1633. 1637 PCB WAS 18S 11A M20 DELETED M13 WAS 8101 RAM. IL 27-8-84 |

| ISS | CHANGES. |
|---|---|
| 29 | ECO 1664. M23 WAS 270053 NOW 270053-3 BJ. 27-7-84. |
| 30 | ECO.1748. 1750 NV RAM EXTN PCB DELETED. M19, M20 ADDED. C40 WAS 100nF. IL 1.11.84 |

ANGULAR +/- | MATERIAL | FINISH

datron ELECTRONICS LTD. NORWICH.

TITLE: 1061 DIGITAL PCB. ASSY.

DRAWING SIZE: A1

DRAWING No. 400329

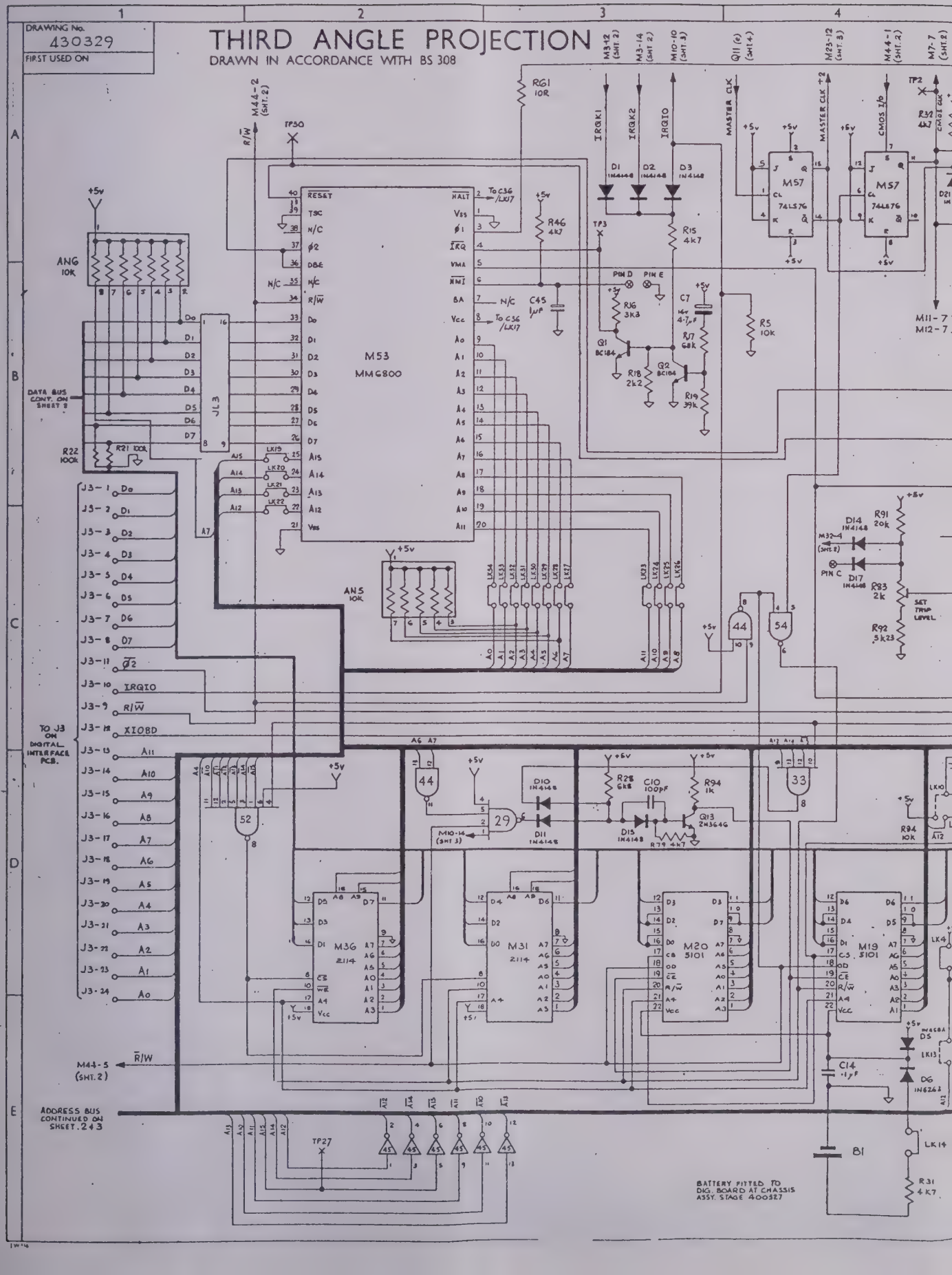
SHEET 1 OF 15

DRAWING No. 430329

FIRST USED ON

# THIRD ANGLE PROJECTION

DRAWN IN ACCORDANCE WITH BS 308



5 | 6 | 7

ALL BURRS TO BE REMOVED

NOTES

| ISS. | CHANGES |
|---|---|
| A | |
| 1 | RELEASED TO PRODN 24.11.78 |
| 2 | ECO 811 PCB UPDATE TO ISS4 IL 8.1.79 |
| 3 | ECO. 815 SHT 4 OF C49 100PF (10210K) ADDED C23 WAS 100PF (12006K) C34 WAS 100PF (13006K) C25 WAS 47PF (12006K) 29-JAN-79 WLS 3. |
| 4 | ECO 835/852 ISS 5 UPDATE TO PCB IL 4-4-79 |
| 5 | ECO.912/911/863 R91 WAS 100K R92 WAS 27K R93 WAS 10K LK17 WAS R62 (0.47Ω) IL 19.6.79 |
| 6 | ECO.928 17.7.79 SEE SHEET 3 |
| 7 | ECO.941/949 SEE SHEET 3 4.9.79 |
| 8 | ECO.1004 SEE SHEET 3 IL 29.10.79 |
| 9 | ECO.938 JU1 - JU2 REMOVED & REPLACED WITH WIRE LINKS. S2-S3 REMOVED. RS1 REMOVED. BATTERY ASSY. NOW OBSOLETE. J7 & LK14 DELETED TP20 ADDED. SEE ALSO SHTS 2-4 IL 8.1.80 |
| 10 | ECO.1046.1092 SEE SHEETS 3,4 & 5 IL 24.3.80 |
| 11 | ECO.1108 R15 WAS 22K R18 WAS 10K IL 18.4.80 |
| 12 | ECO.1135 SEE SHEET 4 IL 19.6.80 |
| 13 | ECO.1147 D21 ADDED IL 30.9.80 |
| 14 | ECO.1198 SEE SHEET 3 IL 6.1.81 |
| 15 | ECO 1214 LA 39 ADDED JR 12.4.81 |
| 16 | ECO 1243.1881 R56 WAS 100K R45 WAS 330K M31,34 WERE 256 X 4 BIT RAMS LK 38 ADDED. PCB WAS ISS 4B JR 2.12.81 |
| 17 | ECO 1942 SEE SHT 2 & 5. B.J. 28-2-84. |
| 18 | ECO 1937 M19 WAS 5101 RAM M20 DELETED JF 23 5 84 |
| 19 | ECO.1748 M19 & M20 WERE PART OF NV RAM EXTN PCB ASSY UNDER M19 REF IL 1.11.84 |

+5V LK17 R68 10K C36 .05μF C47 100μF 6.3V C29 1μF 35V R67 270R C38 220pF TP21

MS4, MS5 (SHT. 3)

R64 2k2 R66 10k Q7 2N3906 C37 22pF R59 22Ω TP20 Φ1

R63 2k2 R65 10k Q6 2N3906 C28 22pF R60 22Ω TP23 Φ2

R58 10R TP12

TP26 TP19 PIN 8 VMA.Φ2 M33-4 (SHT. 2)

D12 1N4001 D16 1N4001 R97 2k2 Q14 BC184 C27 10μF C44 10μF R55 680K R56 82K R99 100K R54 1M R80 68K C32 .068μF R45 360K C30 100pF R44 10K C51 100pF

MG0 ICL 8211 MG2 ICL 8211

R95 4k7 Q16 2N3906 R81 18k R96 10k C43 100pF Q15 2N3904

M35 2532 M30 2532 M18 2532

A12 A13 A14 A15 A16

Do J2-1 D1 J2-2 D2 J2-3 D3 J2-4 D4 J2-5 D5 J2-6 D6 J2-7 D7 J2-8 Ao J2-9 A1 J2-10 LK39 A2 J2-11 LK38 A3 J2-12 XDDSP J2-13 Φ2 J2-14 +5V J2-15 DIG COM J2-16 TO J1 ON DISPLAY DRIVER PCB

M18 ENABLE M29-8 (SHT 2)

| | | | |
|---|---|---|---|
| DRAWN | IL | DATE | 1 9 78 |
| CHECKED | PRH | DATE | |
| APPROVED | | DATE | |

datron ELECTRONICS LTD. NORWICH.

DRAWING SIZE A1

TITLE 1061 MPU & MEMORY CIRCUIT

DRAWING No. 430329

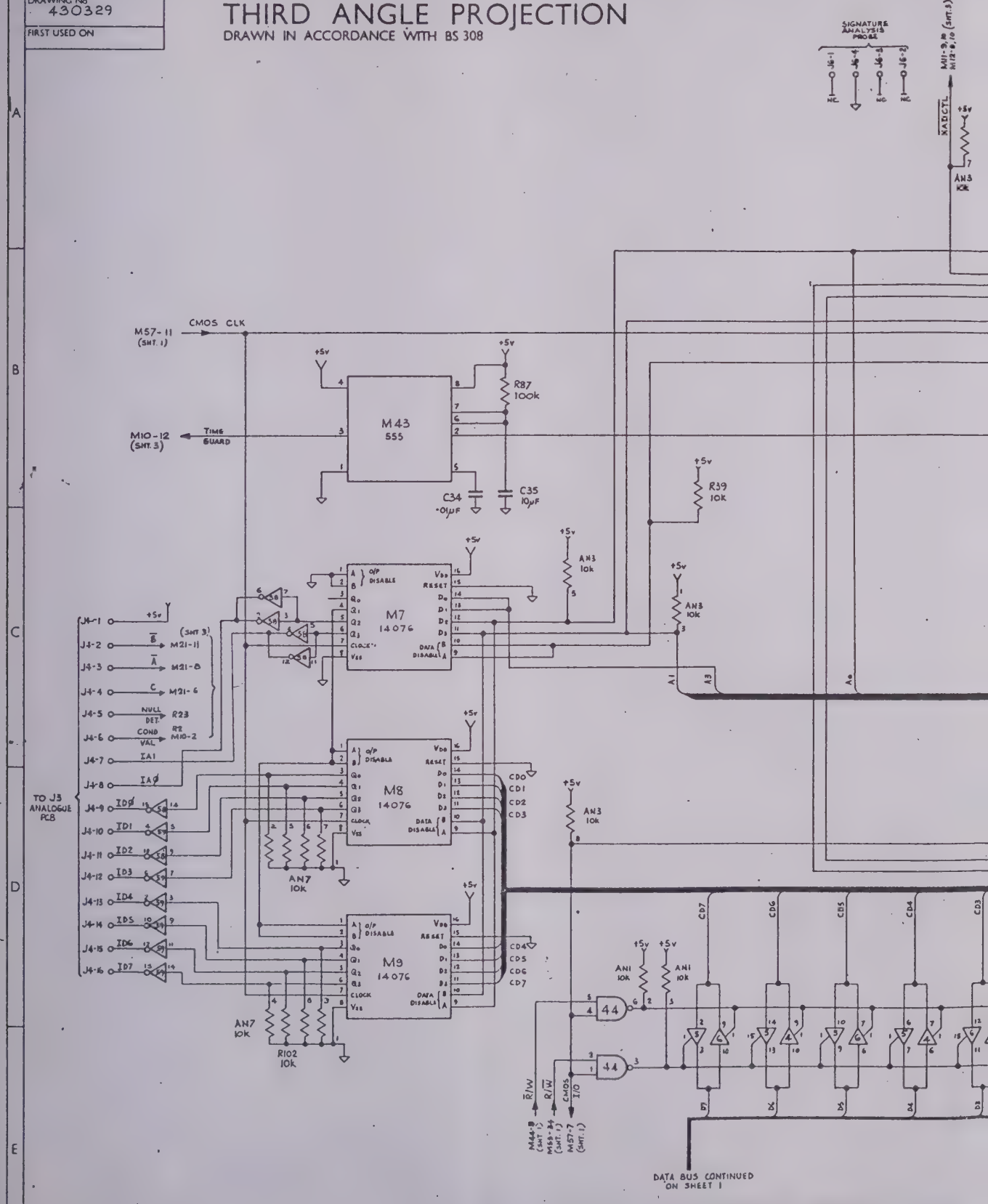
SHEET 1 OF 5

DRAWING No 430329

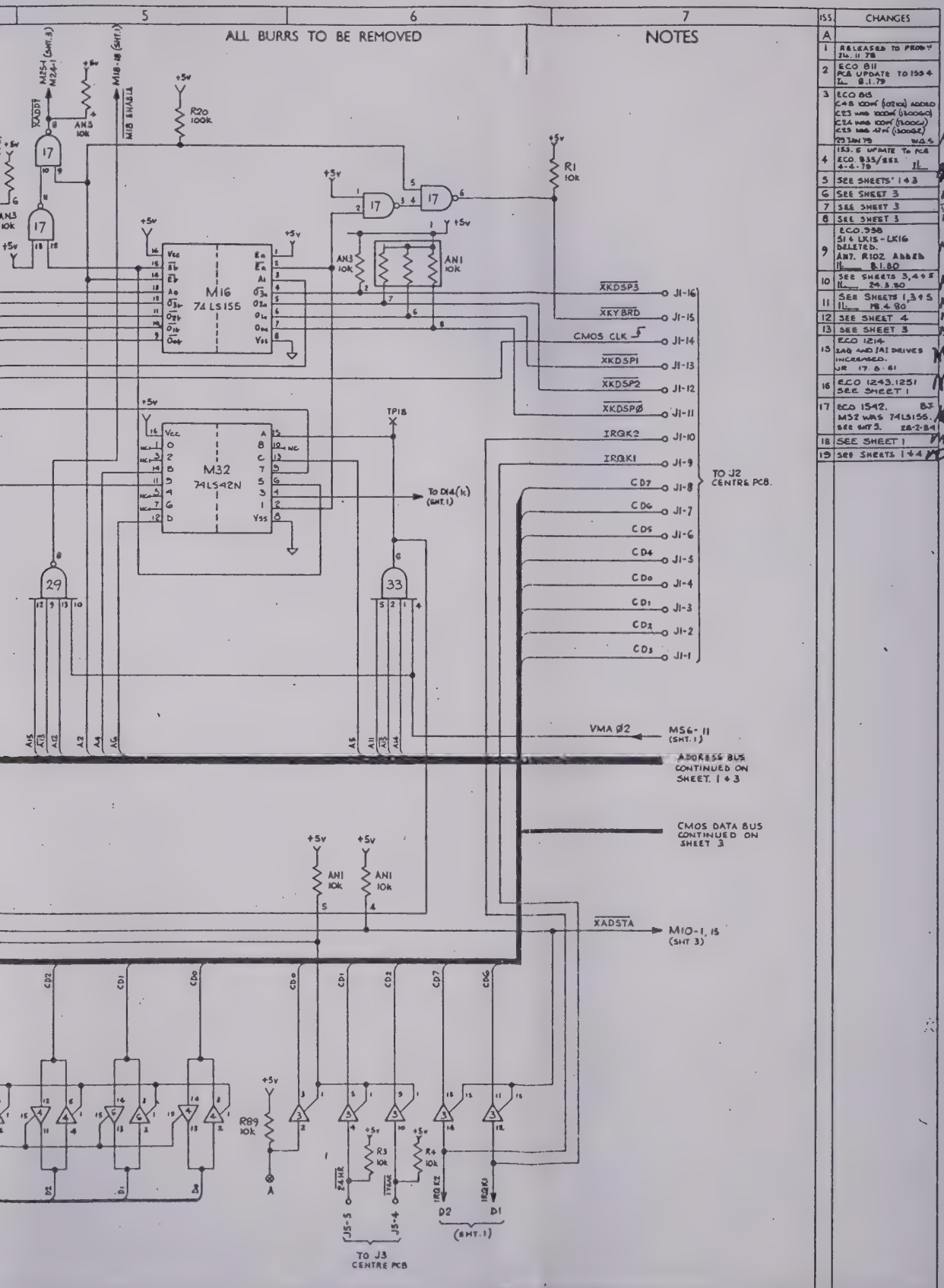
FIRST USED ON

# THIRD ANGLE PROJECTION

DRAWN IN ACCORDANCE WITH BS 308

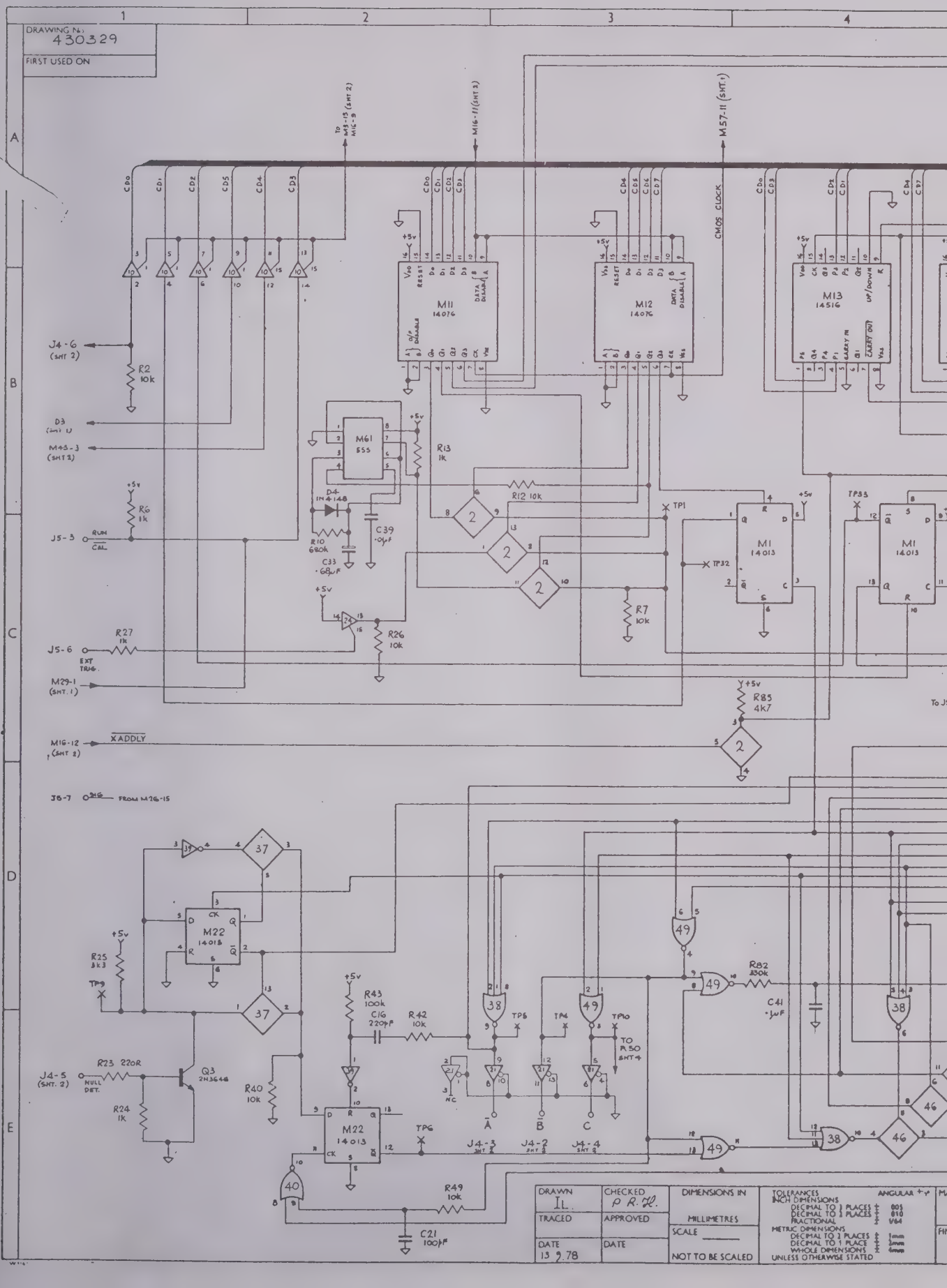


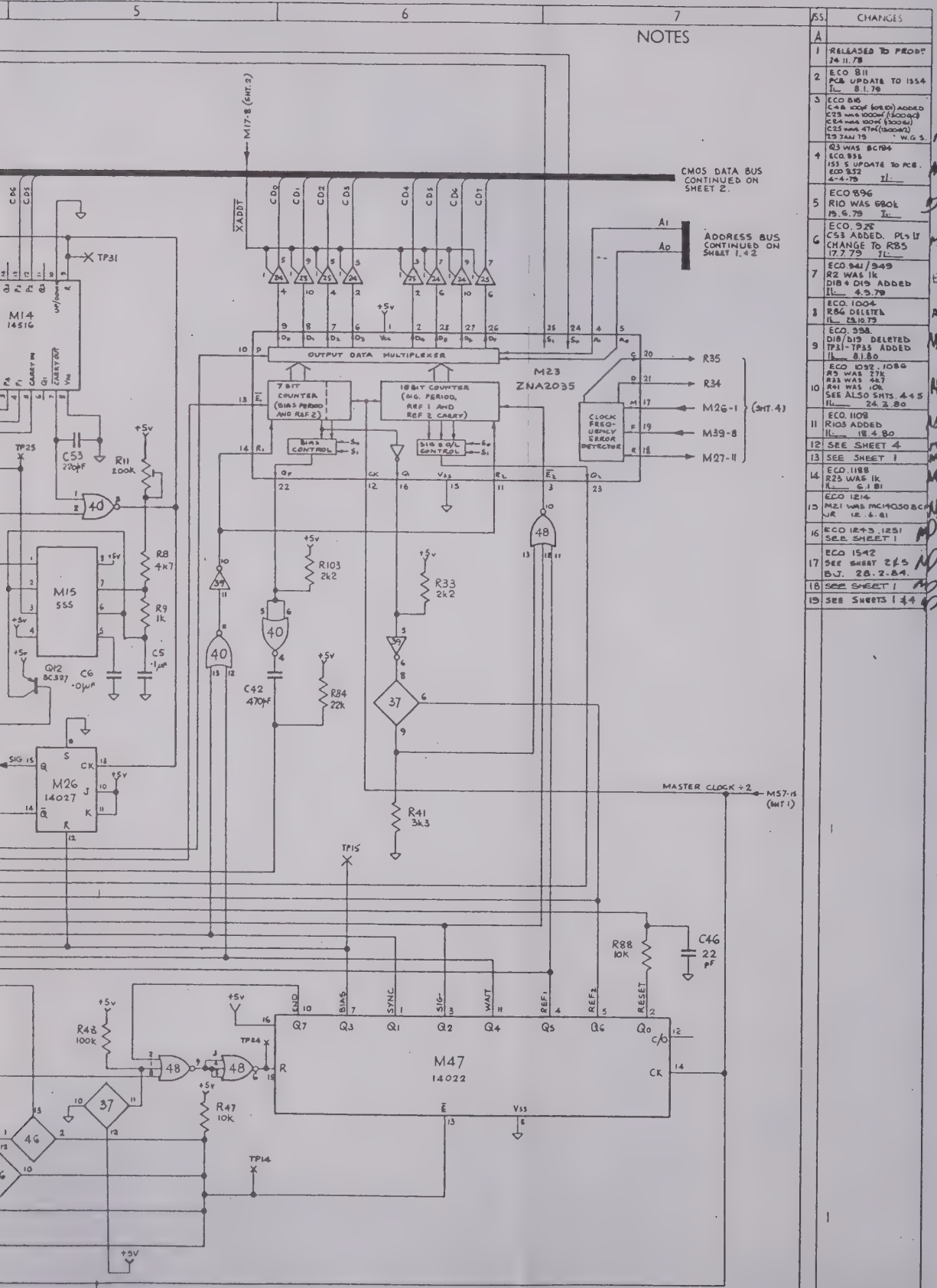

| | | | |
|---|---|---|---|
| DRAWN IL | CHECKED P.R.H. | DIMENSIONS IN MILLIMETRES | TOLERANCES ANGULAR ± ° |
| TRACED | APPROVED | SCALE —— | INCH DIMENSIONS DECIMAL TO 3 PLACES ± .005; DECIMAL TO 2 PLACES ± .010; FRACTIONAL ± 1/64 |
| DATE 13.9.78 | DATE | NOT TO BE SCALED | METRIC DIMENSIONS DECIMAL TO 2 PLACES ± 1mm; DECIMAL TO 1 PLACE ± 2mm; WHOLE DIMENSIONS ± 4mm; UNLESS OTHERWISE STATED |




| ISS. | CHANGES |
|---|---|
| A | |
| 1 | RELEASED TO PRODN 24.11.78 |
| 2 | ECO 811 PCB UPDATE TO ISS 4 IL 8.1.79 |
| 3 | ECO 815 C48 100nF (10TEN) ADDED C23 was 1000F (1300062) C24 was 100nF (1300041) C25 was 47nF (1300082) 29 JAN 79 W.A.S |
| 4 | ISS. 6 UPDATE TO PCB ECO 835/881 4-6-79 IL |
| 5 | SEE SHEETS 1 & 3 |
| 6 | SEE SHEET 3 |
| 7 | SEE SHEET 3 |
| 8 | SEE SHEET 3 |
| 9 | ECO 998 SI 4 LK15 - LK16 DELETED. ANT. R102 ADDED IL 8.1.80 |
| 10 | SEE SHEETS 3, 4 & 5 IL 24.3.80 |
| 11 | SEE SHEETS 1, 3 & 5 IL 18.4.80 |
| 12 | SEE SHEET 4 |
| 13 | SEE SHEET 3 |
| 15 | ECO 1214 IAØ AND IA1 DRIVES INCREASED. JR 17.8.81 |
| 16 | ECO 1243, 1251 SEE SHEET 1 |
| 17 | ECO 1542. BJ M32 WAS 74LS155. SEE SHT 3. 28-2-84 |
| 18 | SEE SHEET 1 |
| 19 | SEE SHEETS 1 & 4 |

| | | | |
|---|---|---|---|
| TERIAL | datron ELECTRONICS LTD. NORWICH. | | DRAWING SIZE A1 |
| NISH | TITLE 1061 CMOS ADDRESS DECODE & I/O CIRCUIT | DRAWING No. 430329 | SHEET 2 OF 5 |


DRAWING No. 430329
FIRST USED ON
CMOS CLOCK
M11 14076
M12 14076
M13 14516
M61 555
M1 14013
M22 14013
R2 10k
R6 1k
R10 680k
R12 10k
R13 1k
R26 10k
R27 1k
R7 10k
R85 4k7
R25 3k3
R23 220R
R24 1k
R40 10k
R42 10k
R43 100k
R49 10k
R82 180k
C16 220pF
C21 100pF
C33 .68µF
C39 .01µF
C41 .1µF
D4 IN4148
Q3 2N3646
TP1
TP32
TP33
TP6
TP7
TP9
TP10
TPG
J4-6 (SHT 2)
D3 (SHT 1)
M43-3 (SHT 2)
J5-3 RUN CAL
J5-6 EXT TRIG.
M29-1 (SHT. 1)
M16-12 (SHT 2) XADDLY
J6-7 FROM M26-15
J4-5 (SHT. 2) NULL DET.
M43-15 (SHT 2) M16-9
M16-11 (SHT 3)
M57-11 (SHT 1)
TO R50 SHT 4
J4-3 SHT 3
J4-2 SHT 3
J4-4 SHT 3
DRAWN IL
CHECKED P.R.H.
TRACED
APPROVED
DATE 13.9.78
DATE
DIMENSIONS IN MILLIMETRES
SCALE
NOT TO BE SCALED
TOLERANCES UNLESS OTHERWISE STATED
INCH DIMENSIONS
DECIMAL TO 3 PLACES ±.005
DECIMAL TO 2 PLACES ±.010
FRACTIONAL ±1/64
METRIC DIMENSIONS
DECIMAL TO 2 PLACES ±1mm
DECIMAL TO 1 PLACE ±.5mm
WHOLE DIMENSIONS ±1mm
ANGULAR ±1°




| SS. | CHANGES |
|---|---|
| A | |
| 1 | RELEASED TO PRODN 24.11.78 |
| 2 | ECO 811 PCB UPDATE TO 1554 IL 8.1.79 |
| 3 | ECO 815 C48 100nF (MYLAR) ADDED C23 was 1000pF (1N4004) C24 was 100N (1N4006) C25 was 47pF (1N4001) 29 JAN 79 W.G.S. |
| 4 | Q3 WAS BC184 ECO 935 155 S UPDATE TO PCB. ECO 932 4-4-79 IL |
| 5 | ECO 896 R10 WAS 680L 19.6.79 IL |
| 6 | ECO. 928 CS3 ADDED. PL9 LT CHANGE TO R35 17.7.79 IL |
| 7 | ECO 941/949 R2 WAS 1k D18 & D19 ADDED IL 4.9.79 |
| 8 | ECO. 1004 R84 DELETED IL 29.10.79 |
| 9 | ECO. 998 D18/D19 DELETED TP21-TP33 ADDED IL 8.1.80 |
| 10 | ECO 1092, 1086 R9 WAS 27k R21 WAS 4k7 R41 WAS 10k SEE ALSO SHTS. 4 & 5 IL 24.2.80 |
| 11 | ECO 1109 R105 ADDED IL 18.4.80 |
| 12 | SEE SHEET 4 |
| 13 | SEE SHEET 1 |
| 14 | ECO 1188 R23 WAS 1k IL 6.1.81 |
| 15 | ECO 1214 M21 WAS MC14030BCP UR 12.6.81 |
| 16 | ECO 1243, 1251 SEE SHEET 1 |
| 17 | ECO 1542 SEE SHEET 2 & 5 BJ. 28.2.84. |
| 18 | SEE SHEET 1 |
| 19 | SEE SHEETS 1 & 4 |

datron ELECTRONICS LTD. NORWICH.

DRAWING SIZE A1

TITLE 1061 A-D CONVERTER

DRAWING No. 430329

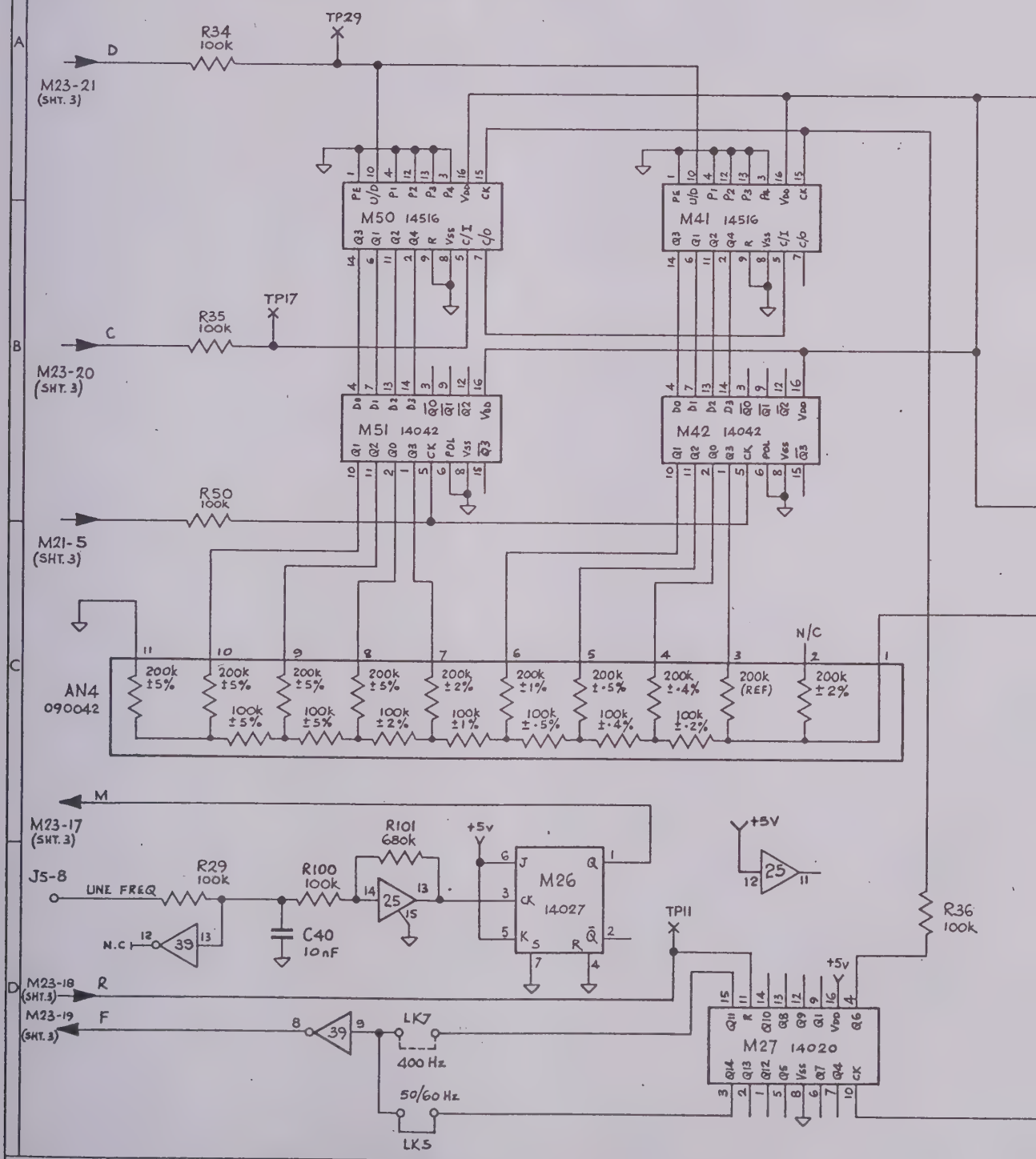
SHEET 3 OF 5

DRAWING No. 430329

FIRST USED ON 1061

# THIRD ANGLE PROJECTION

DRAWN IN ACCORDANCE WITH BS 308



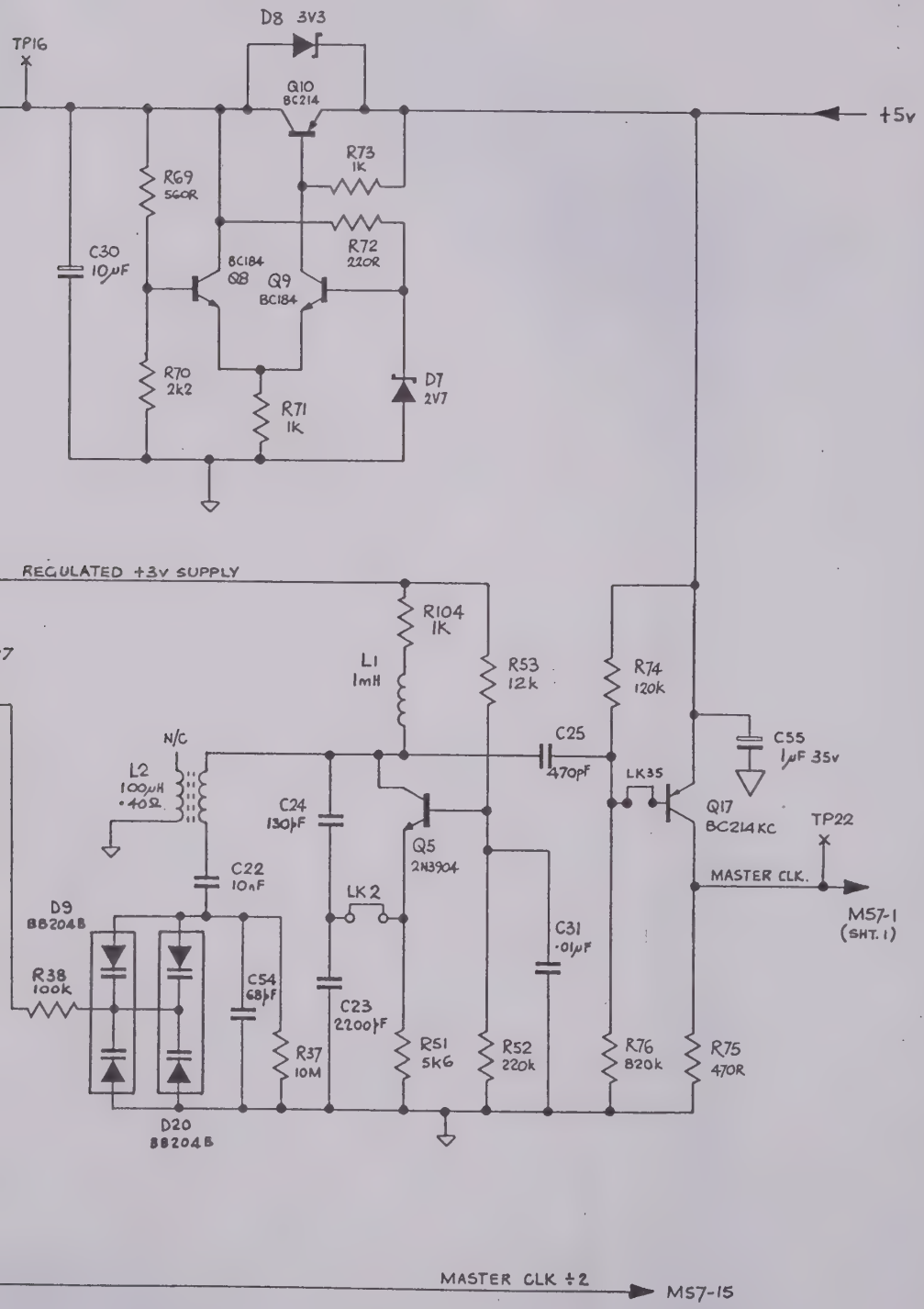

| DRAWN | CHECKED | DIMENSIONS IN | TOLERANCES ANGULAR ± ½° | MATERIAL |
|---|---|---|---|---|
| TL | P. A. H. | MILLIMETRES | INCH DIMENSIONS<br>DECIMAL TO 3 PLACES ± ·005<br>DECIMAL TO 2 PLACES ± ·010<br>FRACTIONAL ± 1/64<br>METRIC DIMENSIONS<br>DECIMAL TO 2 PLACES ± 1mm<br>DECIMAL TO 1 PLACE ± 2mm<br>WHOLE DIMENSIONS ± 4mm<br>UNLESS OTHERWISE STATED | |
| TRACED | APPROVED | SCALE —— | | FINISH |
| DATE 18 9. 78 | DATE | NOT TO BE SCALED | | |

JW 1162

4 | 5 | 6

L BURRS TO BE REMOVED

NOTES




| ISS. | CHANGES |
|---|---|
| A | |
| 1 | RELEASED TO PROD 24.11.78 |
| 2. | ECO 811 PCB UPDATE TO ISSUE 4 IL. 8.1.79 |
| 3 | ECO 815 C48 1000pf(102101) ADDED. C23 WAS 1000pf(102061) C24 WAS 100pf (120061) C25 WAS 47pf(300681) 29-JAN 79 W.G.E. |
| 4 | ISS 5 UPDATE TO PCB ECO 835/852 4-4-79 IL. |
| 5 | SEE SHEETS 1 & 3 |
| 6 | SEE SHEET 3 |
| 7 | SEE SHEET 3 |
| 8 | SEE SHEET 3 |
| 9 | ECO.998 M25 PINS 14 & 13 WERE M39 PINS 13 & 12 RESP. R100. R101 ADDED IL. 8.1.80 |
| 10 | ECO. 1046. R98 REPLACED BY LK35 Q11 DELETED. D9 WAS MVAM-2 D20, C54, C55 & Q17 ADDED. C22 WAS 470pF R76 WAS 83k R52 WAS 12k R51 WAS 100R IL. 24.3.80 |
| 11 | SEE SHEETS 1 3 AND 5 IL. 18.4.80 |
| 12 | ECO. 1135 R51 WAS 12k Q17 WAS 2N3906 R104 ADDED. IL. 18.6.80 |
| 13 | SEE Sheet 1 |
| 14 | SEE SHEET 3 |
| 15 | ECO 1214 SEE SHEETS — 1, 3, 5. |
| 16 | ECO 1243, 1251 SEE SHEET 1 |
| 17 | ECO 1542 SEE SHEET 2 & 5 B.J. 28-2-84 |
| 18 | SEE SHEET 1 |
| 19 | ECO. 1750 C40 WAS .1pF IL. 1.11.84 |

datron ELECTRONICS LTD. NORWICH.

DRAWING SIZE A2

TITLE 1061 LINE LOCKING CIRCUIT

DRAWING No. 430329

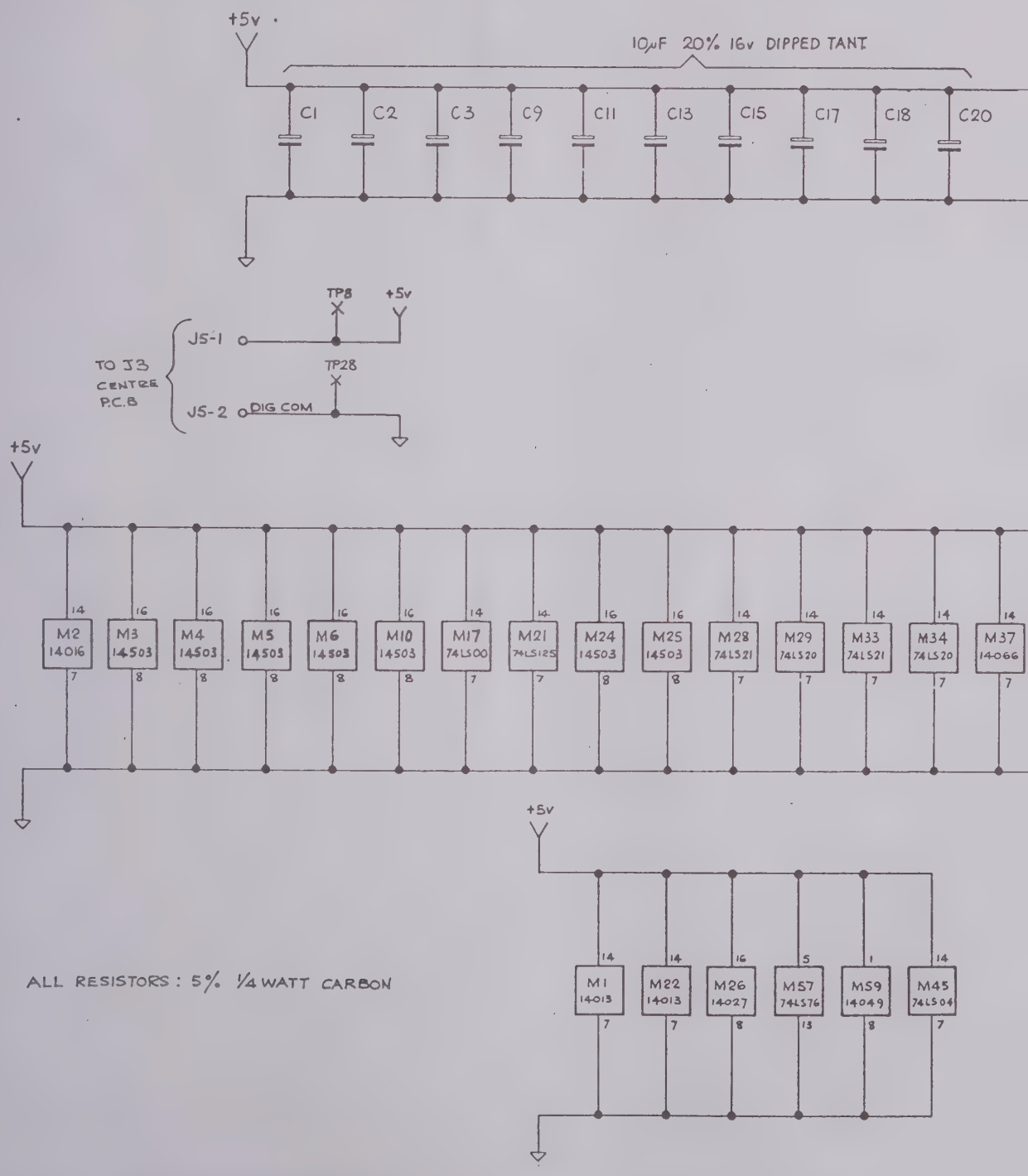
SHEET 4 OF 5

DRAWING No.
430329
FIRST USED ON

# THIRD ANGLE PROJECTION

DRAWN IN ACCORDANCE WITH BS 308

ALL



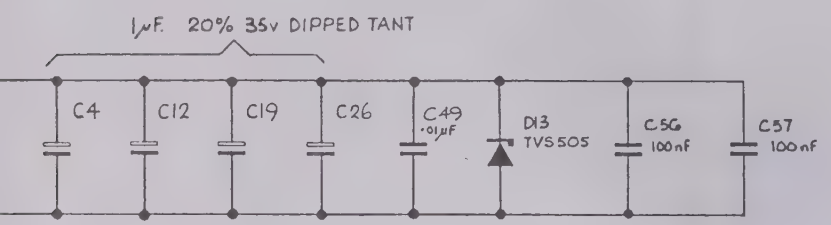

ALL RESISTORS : 5% ¼ WATT CARBON

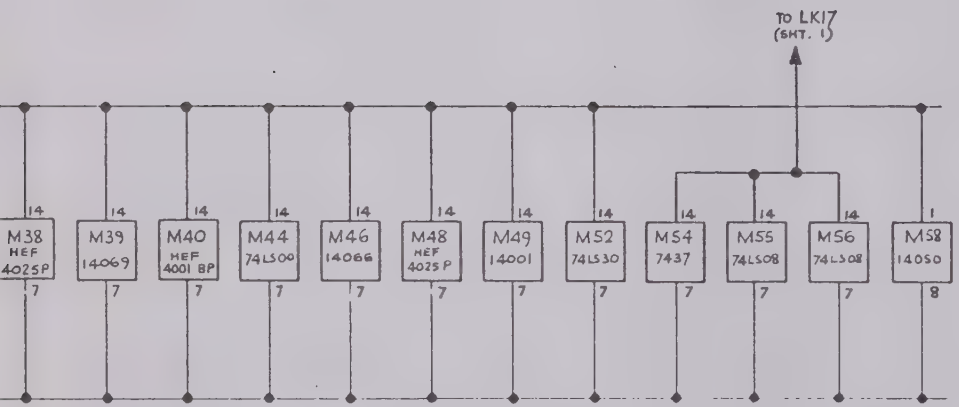
| | | | | |
|---|---|---|---|---|
| DRAWN IL. | CHECKED P.R.H. | DIMENSIONS IN MILLIMETRES | TOLERANCES ANGULAR ± ½° WITH DIMENSIONS: DECIMAL TO 3 PLACES ± .001; DECIMAL TO 2 PLACES ± .010; FRACTIONAL ± 1/64; METRIC DIMENSIONS: DECIMAL TO 2 PLACES ± 1mm; DECIMAL TO 1 PLACE ± 2mm; WHOLE DIMENSIONS ± 4mm; UNLESS OTHERWISE STATED | MATERIAL |
| TRACED | APPROVED | SCALE —— NOT TO BE SCALED | | FINISH |
| DATE 12.10.78 | DATE | | | |

4 | 5 | 6

BURRS TO BE REMOVED

NOTES




| ISS. | CHANGES |
|---|---|
| A | |
| 1 | RELEASED TO PROD 24.11.78 |
| 2 | ECO 811 PCB UPDATE TO ISSUE 4 IL 8.1.79 |
| 3 | ECO 815 C48 100nF (502101) ADDED C23 WAS 1000nF (1300861) C24 WAS 100nF (1300861) C25 WAS 47nF (1300621) 23JAN79 W.O.S. |
| 4 | ISS 5 UPDATE TO PCB ECO 835/852 4-4-79 IL |
| 5 | SEE SHEETS 1&3 |
| 6 | SEE SHEET 3 |
| 7 | SEE SHEET 3 |
| 8 | SEE SHEET 3 |
| 9 | ECO.998.1047 SEE SHTS 1-4 M38 WAS 14025 IL 8.1.80 |
| 10 | ECO.1044 D13 WAS 1CTE-5 M37& M46 WERE 14016. IL 24.3.80 |
| 11 | ECO. 1108 M40 WAS 14001 IL 18.4.80 |
| 12 | SEE SHEET 4 |
| 13 | SEE SHEET 1 |
| 14 | SEE SHEET 3 |
| 15 | ECO 1214 M21 WAS 14050 JR 12·6·81 |
| 16 | ECO 1243.1251 SEE SHEET 1 |
| 17 | ECO 1542 C57 & C56 ADDED SEE SHEET 2. BJ. 28-2-84. |
| 18 | SEE SHEET 1 |
| 19 | SEE SHEETS 1&4 |

datron ELECTRONICS LTD. NORWICH.

DRAWING SIZE A2

TLE 1061 DIGITAL PCB. ASSY.

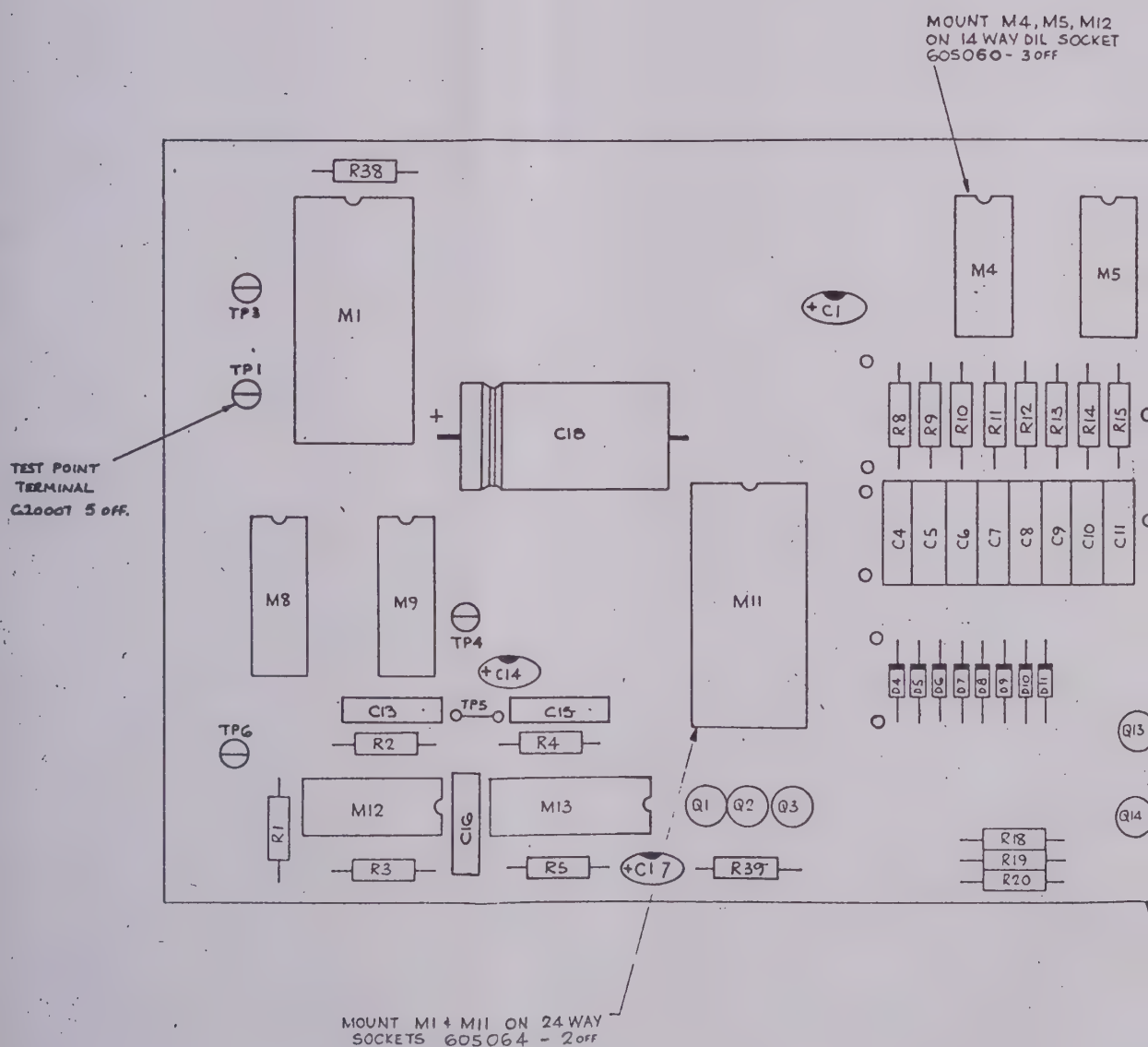
DRAWING No. 430329

SHEET 5 OF 5

DRAWING No.
400330
FIRST USED ON

# THIRD ANGLE PROJECTION

DRAWN IN ACCORDANCE WITH BS 308




| | | | | |
|---|---|---|---|---|
| DRAWN IL | CHECKED | DIMENSIONS IN MILLIMETRES | TOLERANCES ANGULAR ± INCH DIMENSIONS DECIMAL TO 3 PLACES ± .005 DECIMAL TO 2 PLACES ± .010 FRACTIONAL ± 1/64 METRIC DIMENSIONS DECIMAL TO 2 PLACES ± 0.1mm DECIMAL TO 1 PLACE ± 0.2mm WHOLE DIMENSIONS ± 0.4mm UNLESS OTHERWISE STATED | MATERIAL SEE PARTS LIST |
| TRACED | APPROVED | SCALE 2:1 NOT TO BE SCALED | | FINISH |
| DATE 3.5.78 | DATE | | | |

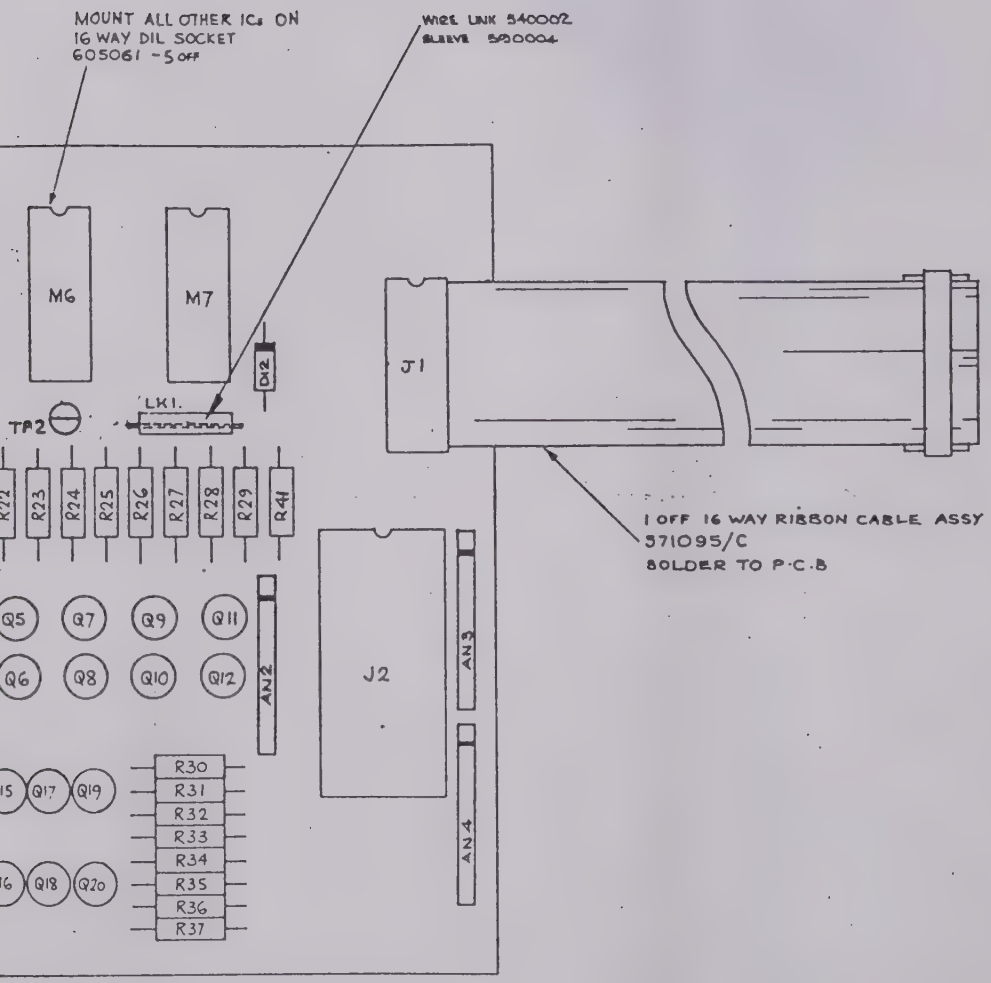
| 4 | 5 | 6 |
|---|---|---|

LL BURRS TO BE REMOVED

NOTES

1. MAKE TP1-TP6 FROM 22 SWG. BTC. WIRE — PART Nº 540002.

| ISS. | CHANGES | |
|---|---|---|
| C | | |
| 1 | RELEASED TO PRODUCTION 29.9.78 | |
| 2 | C18 ADDED & R40 ECO 789. 17 Nov 78. W.G.S. | NO |
| 3 | AN2-AN4 ADDED R41 & D12 ADDED ECO 822 20-FEB 79 W.G.S. | |
| 4 | R40 WAS 180Ω COOLED NOW WIRE LINK ECO 854 10 MAY 79 W.G.S. | NO |
| 5 | CLIP FOR J1 WAS 606005. ECO 904 21.6.79 | NO |
| 6 | ECO 1000 & 1025 RIBBON CABLE CLIP WAS 606007. BJ D12 WAS BZY | NO |
| 7 | ECO 1217 J1 WAS 16 WAY SOCKET. JR 17-8-81 | NO |
| 8 | ECO 1253 PARTS LIST CHANGE TO J2 JR 2-12-81 | NO |
| 9 | ECO 1588 NYLATCH DELETED PCB WAS 1353A BJ. 1st MAR 84. | NO |




PCB 410097-5B

datron ELECTRONICS LTD. NORWICH.

DRAWING SIZE A2

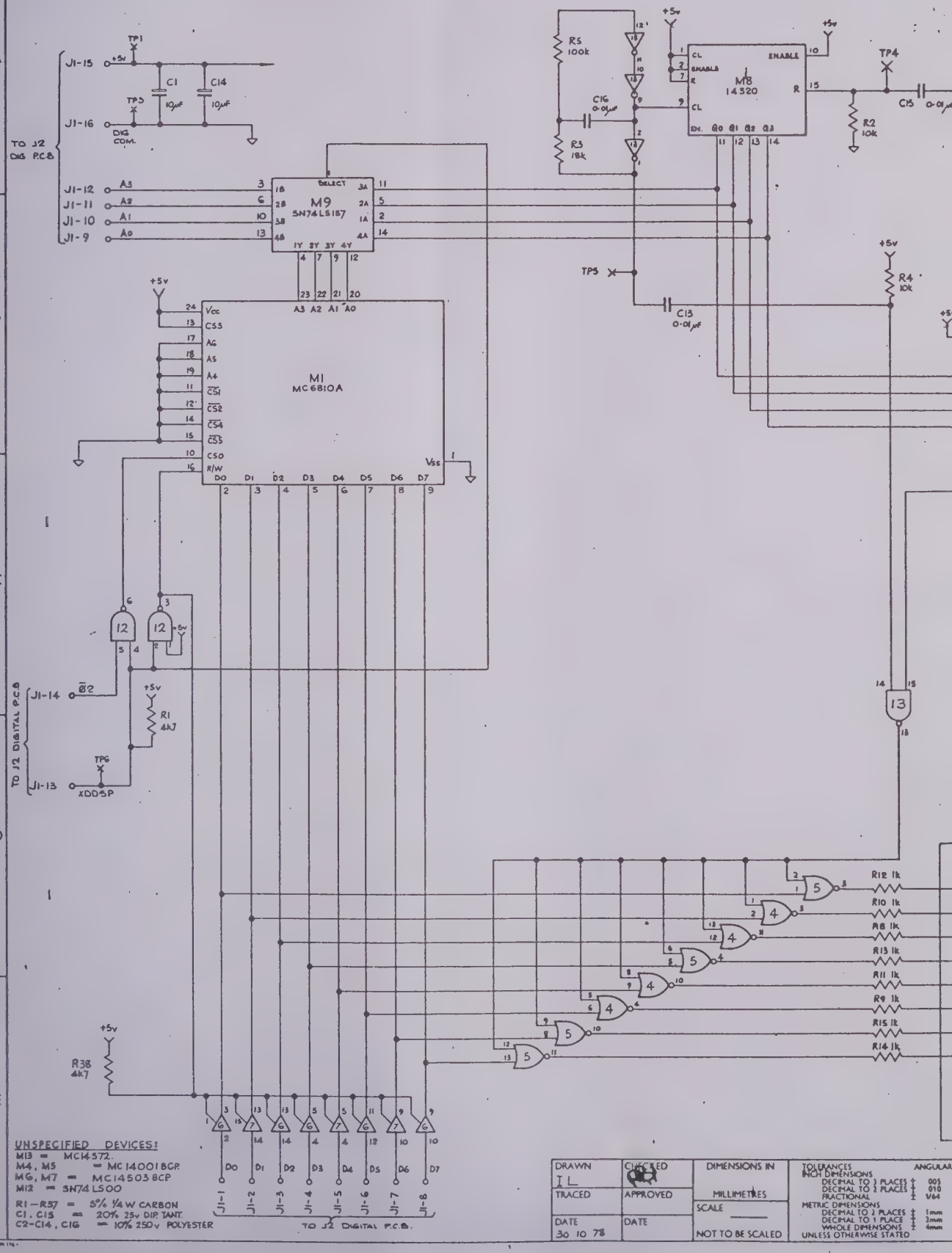
| TITLE | DRAWING No | SHEET |
|---|---|---|
| 1061 DISPLAY DRIVER PCB. ASSY. | 400330 | 1 OF 7 |

DRAWING No. 430330

FIRST USED ON 1061

# THIRD ANGLE PROJECTION

DRAWN IN ACCORDANCE WITH BS 308




UNSPECIFIED DEVICES:

M13 = MC14572.
M4, M5 = MC14001BCP.
M6, M7 = MC14503BCP.
M12 = SN74LS00

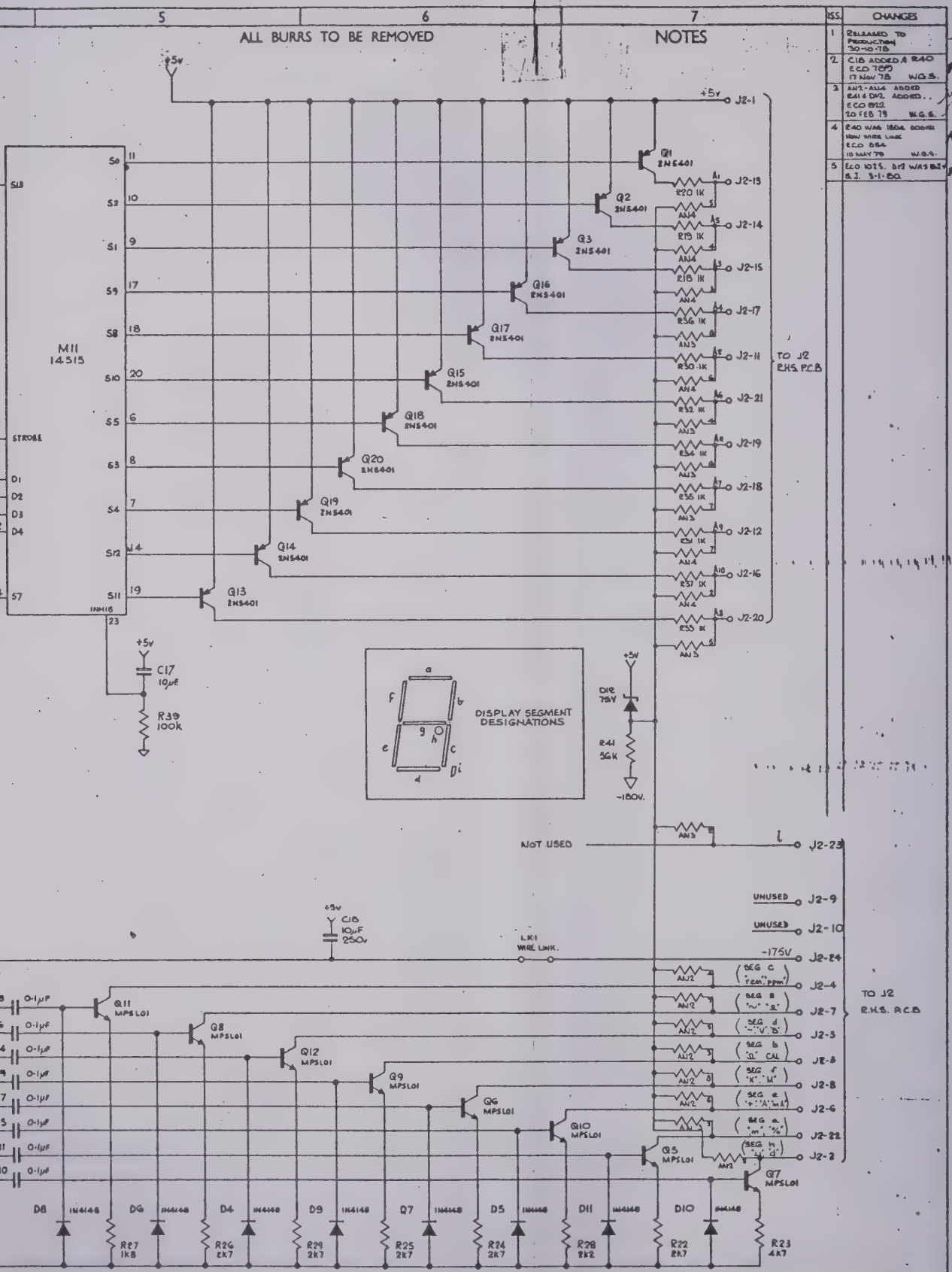
R1–R37 = 5% ¼W CARBON
C1, C15 = 20% 25v DIP. TANT.
C2–C14, C16 = 10% 250v POLYESTER

| DRAWN | CHECKED | DIMENSIONS IN | TOLERANCES | ANGULAR |
|---|---|---|---|---|
| IL | | MILLIMETRES | INCH DIMENSIONS | |
| TRACED | APPROVED | SCALE —— | DECIMAL TO 3 PLACES ± | 005 |
| | | | DECIMAL TO 2 PLACES ± | 010 |
| DATE 30 10 78 | DATE | NOT TO BE SCALED | FRACTIONAL ± | 1/64 |
| | | | METRIC DIMENSIONS | |
| | | | DECIMAL TO 2 PLACES ± | 1mm |
| | | | DECIMAL TO 1 PLACE ± | 2mm |
| | | | WHOLE DIMENSIONS ± | 4mm |
| | | | UNLESS OTHERWISE STATED | |

ALL BURRS TO BE REMOVED

NOTES

| ISS. | CHANGES |
|---|---|
| 1 | RELEASED TO PRODUCTION 30-10-78 |
| 2 | C18 ADDED & R40 ECO 7609 17 NOV 78 W.G.S. |
| 3 | AN2-AN4 ADDED R414 DWG. ADDED.. ECO 8112 20 FEB 79 W.G.S. |
| 4 | R40 WAS 180R 300MW NOW WIRE LINK ECO 8641 10 MAY 79 W.G.S. |
| 5 | ECO 10215. D12 WAS BZY88 B.J. 3-1-80 |



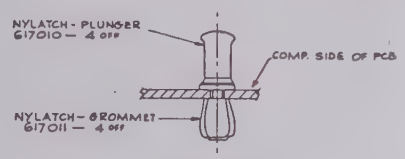

| | | | |
|---|---|---|---|
| MATERIAL | datron ELECTRONICS LTD. NORWICH. | | DRAWING SIZE A1 |
| FINISH | TITLE 1061 DISPLAY DRIVER PCB | DRAWING No. 430330 | SHEET 1 OF 1 |

DRAWING No. 400331

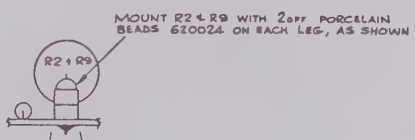
FIRST USED ON 1061

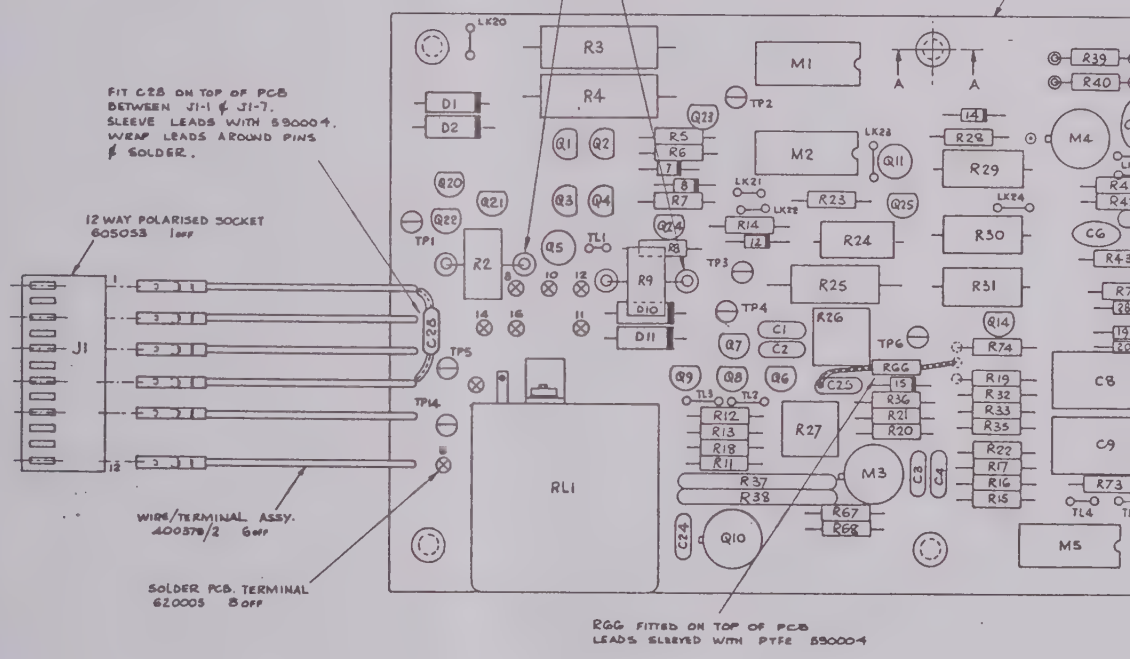
# THIRD ANGLE PROJECTION

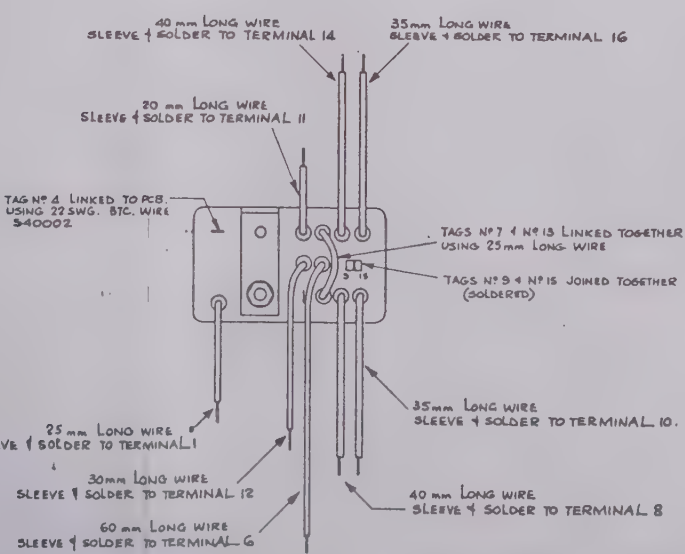
DRAWN IN ACCORDANCE WITH BS 308




SECTION A-A
(TYPICAL)





40 mm LONG WIRE
SLEEVE & SOLDER TO TERMINAL 14
35mm LONG WIRE
SLEEVE & SOLDER TO TERMINAL 16
20 mm LONG WIRE
SLEEVE & SOLDER TO TERMINAL 11
TAG Nº 4 LINKED TO PCB.
USING 22 SWG. BTC. WIRE
540002
TAGS Nº 7 & Nº 13 LINKED TOGETHER
USING 25mm LONG WIRE
TAGS Nº 9 & Nº 15 JOINED TOGETHER
(SOLDERED)
35mm LONG WIRE
SLEEVE & SOLDER TO TERMINAL 10.
25 mm LONG WIRE
SLEEVE & SOLDER TO TERMINAL 1
30mm LONG WIRE
SLEEVE & SOLDER TO TERMINAL 12
40 mm LONG WIRE
SLEEVE & SOLDER TO TERMINAL 8
60 mm LONG WIRE
SLEEVE & SOLDER TO TERMINAL 6

NOTI

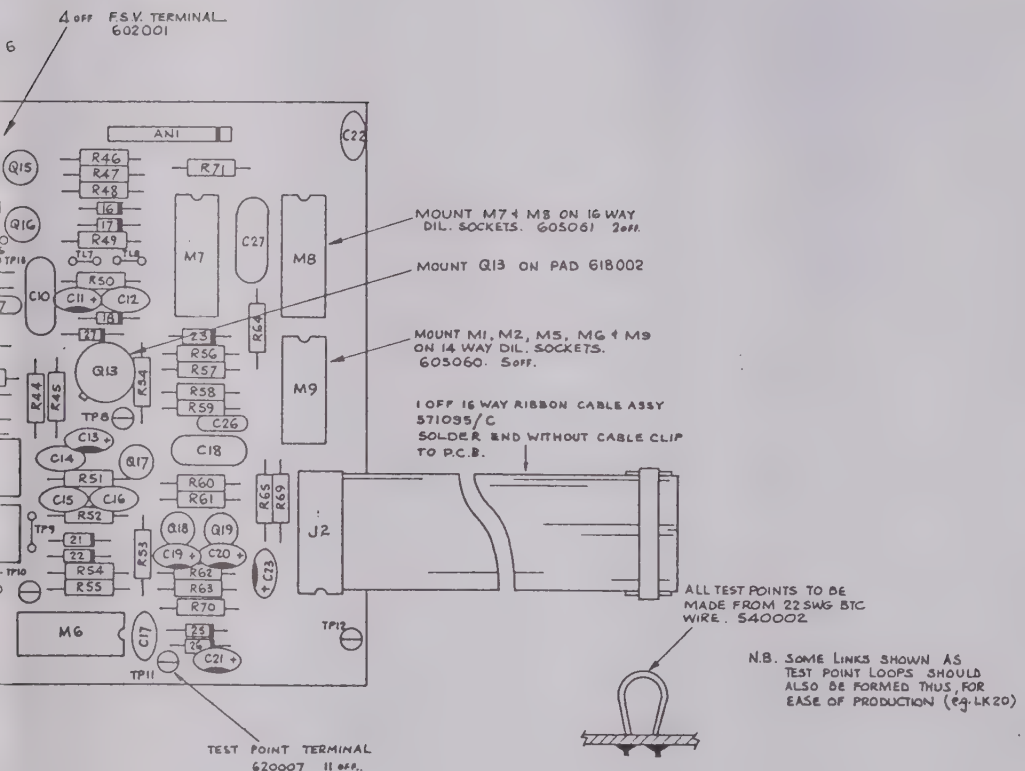
| DRAWN | CHECKED | DIMENSIONS IN | TOLERANCES |
|---|---|---|---|
| IL | | MILLIMETRES | INCH DIMENSIONS DECIMAL TO DECIMAL TO FRACTIONAL |
| TRACED | APPROVED | SCALE 2:1 | METRIC DIMENSION DECIMAL TO DECIMAL TO WHOLE DIME |
| DATE 30 7. 80 | DATE | NOT TO BE SCALED | UNLESS OTHERWIS |

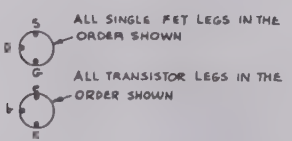
| 5 | 6 | 7 |
|---|---|---|

ALL BURRS TO BE REMOVED

## NOTES

| ISS | CHANGES |
|---|---|
| 12 | ECO 1176<br>ASSY COMPLETELY RE-DRAWN. PCB. WAS ISSUE 4.<br>R71 – R74 ADDED<br>R66/R70 TRACKED-IN.<br>R10 DELETED.<br>C27 D28 ADDED.<br>C26 D27 TRACKED-IN<br>OTHER PARTS LIST CHANGES - SEE ECO.<br>IL 28.11.80 |
| 13 | ECO 1217<br>J2 WAS 16 WAY SOCKET.<br>JR 16.8.81. |
| 14 | ECO 1300.<br>R34, R48 & R66 VALUE CHANGE<br>R66 POSITION CHANGE<br>SOM MAR 82 BT. |
| 15 | ECO TGGT.<br>C28 ADDED.<br>R66 NOW ON TOP OF PCB.<br>BJ 7th AUG 84. |


4 OFF F.S.V. TERMINAL 602001
ANT
MOUNT M7 & M8 ON 16 WAY DIL. SOCKETS. 605061 2 off.
MOUNT Q13 ON PAD 618002
MOUNT M1, M2, M5, M6 & M9 ON 14 WAY DIL. SOCKETS. 605060. 5 off.
1 OFF 16 WAY RIBBON CABLE ASSY 571095/C SOLDER END WITHOUT CABLE CLIP TO P.C.B.
J2
ALL TEST POINTS TO BE MADE FROM 22 SWG BTC WIRE. 540002
N.B. SOME LINKS SHOWN AS TEST POINT LOOPS SHOULD ALSO BE FORMED THUS, FOR EASE OF PRODUCTION (eg. LK20)
TEST POINT TERMINAL 620007 11 off.



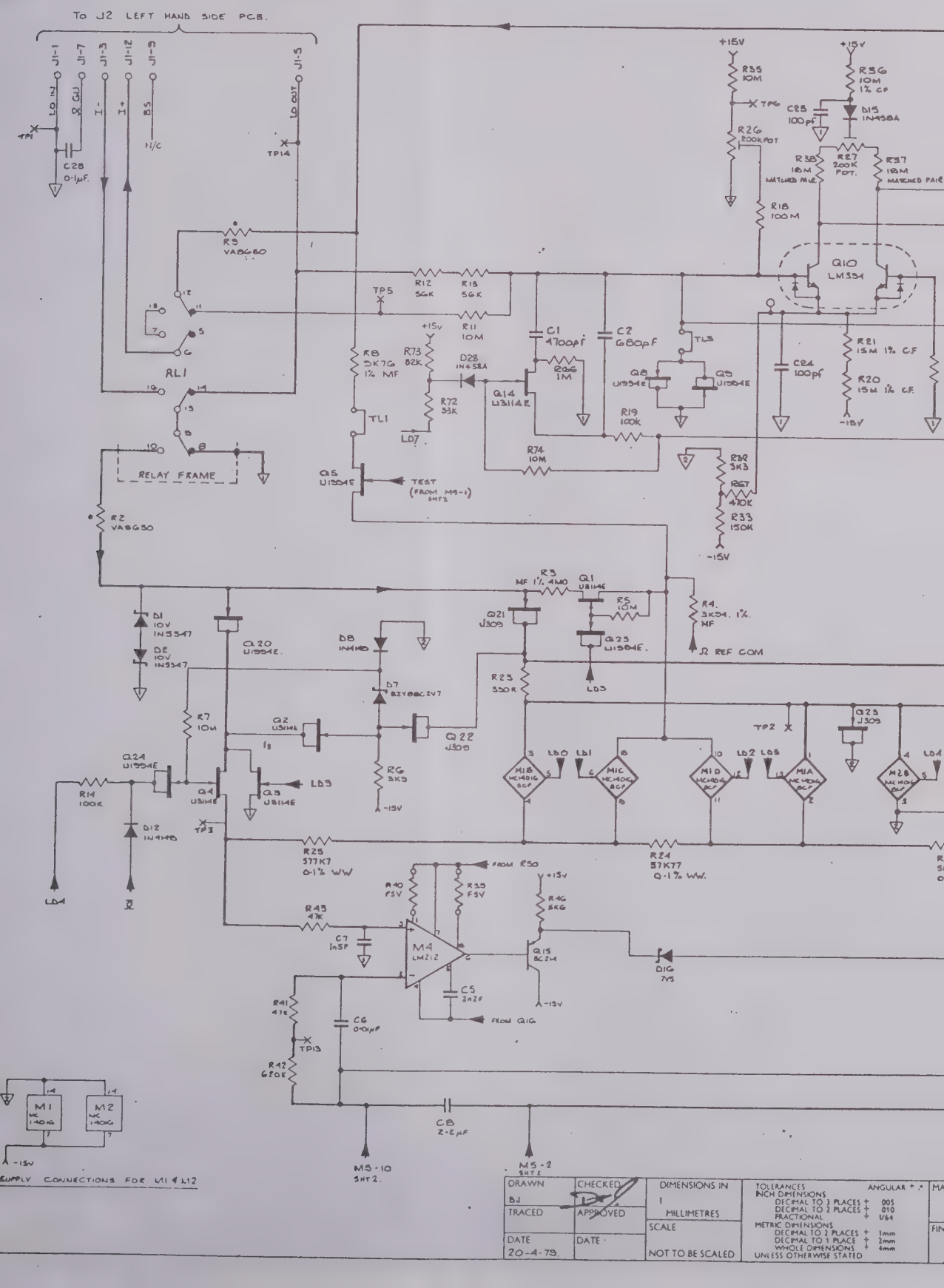

LL WIRE IS 540008 PTFE INSULATED WHITE
LL LENGTHS OF WIRE SHOWN ON RELAY ARE
OTAL LENGTHS, THEN 3mm IS TO BE STRIPPED
ROM EACH END.
LEEVE WIRES WITH 590001 1/2 PIECE FOR EACH
ONNECTION. ie. 1 PIECE FOR EACH WIRE.

| | | | |
|---|---|---|---|
| ANGULAR ± .° | MATERIAL | datron ELECTRONICS LTD. NORWICH. | DRAWING SIZE A1 |
| PLACES ± .005<br>PLACES ± .010<br>± 1/64 | FINISH | TITLE 1061 OHMS PCB. ASSY. | DRAWING No. 400331 |
| PLACES ± 1mm<br>PLACE ± 2mm<br>IONS ± 4mm<br>STATED | | | SHEET 1 OF 12 |

ING No.
30331.
USED ON
061.

# THIRD ANGLE PROJECTION

DRAWN IN ACCORDANCE WITH BS 308



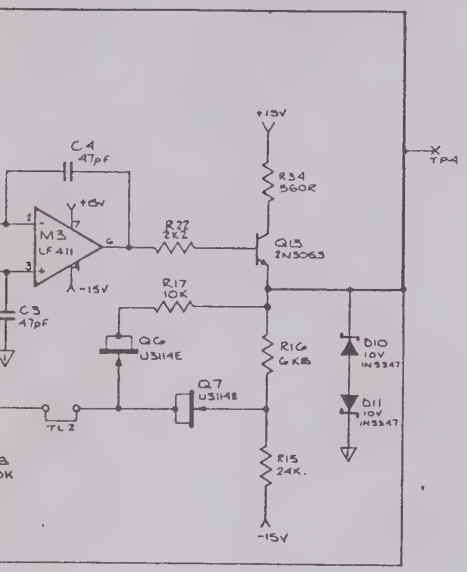

| | | | |
|---|---|---|---|
| DRAWN BJ | CHECKED | DIMENSIONS IN MILLIMETRES | TOLERANCES ANGULAR ± .° |
| TRACED | APPROVED | SCALE NOT TO BE SCALED | INCH DIMENSIONS DECIMAL TO 3 PLACES ± .005; DECIMAL TO 2 PLACES ± .010; FRACTIONAL ± 1/64 |
| DATE 20-4-79. | DATE | | METRIC DIMENSIONS DECIMAL TO 2 PLACES ± 1mm; DECIMAL TO 1 PLACE ± 2mm; WHOLE DIMENSIONS ± 4mm; UNLESS OTHERWISE STATED |

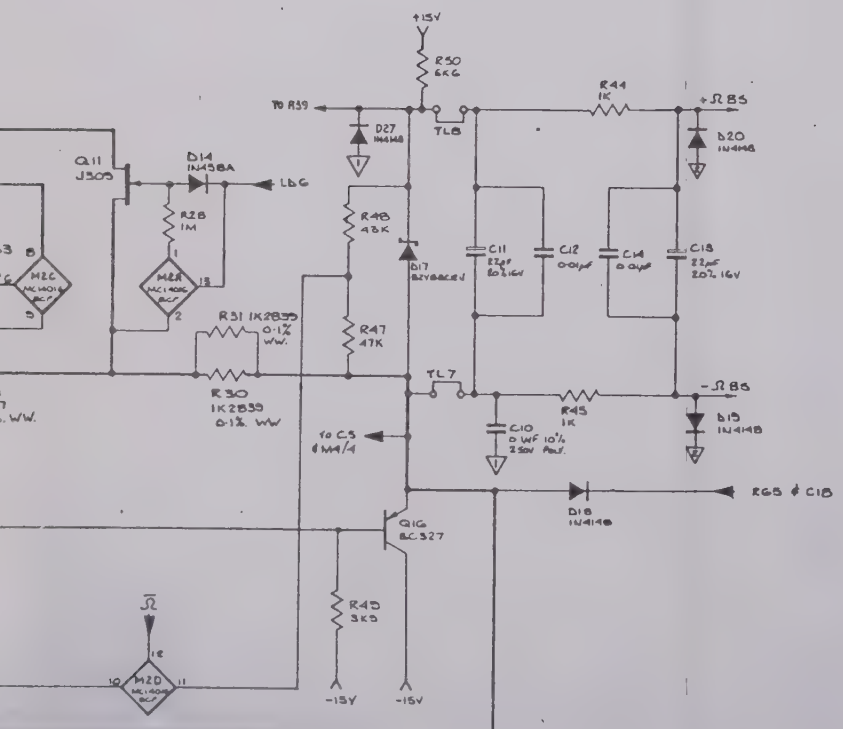
5 | 6 | 7

ALL BURRS TO BE REMOVED

NOTES

| ISS. | CHANGES |
|---|---|
| 1° | RELEASED. |
| 2 | D23 WAS IN4148. BJ<br>R56 - 1M. 4-6-79<br>C13 = 0·1µF. MC |
| 3 | ECO 896. D24. BJ<br>DELETED. 20-6-79.<br>ECO 908<br>D7, C8 V8 NOW C8V7.<br>R6 10K NOW 5K9.<br>R15 15K NOW 24K. MC |
| 4 | ECO 930 RE-INSTATE D2<br>ECO 933 Q21, Q22 & etc<br>U1 3046's NOW U309's<br>BJ 13-7-79. MD |
| 5 | ECO 1054 & 1082<br>Q12 DELETED<br>R32 WAS 2K7. 0.005%<br>R34 WAS 560R 0.05% 0.6W<br>R36 WAS 18K 0.1% 0.4W<br>R67 ADDED<br>PCB NOW 1186-4.<br>TL6 & TP7 DELETED<br>R22, 23, 29 DELETED<br>R33 WAS 1M5 0.001%<br>R24 & R68 ADDED<br>C24 & C25 ADDED<br>W.S.S. 6-FEB 80 MD |
| 6 | SEE SHEET 2 MD |
| 7 | ECO. 1124<br>C7 WAS 3n3F<br>IL 2.6.80 MD |
| 8 | ECO. 1134<br>D27 ADDED.<br>IL 19.6.80 MD |
| 9 | ECO. 1176<br>R72, R73, R74, & D28 ADDED.<br>R10 DELETED.<br>R26 WAS 20k<br>R35 WAS 1M2<br>SEE ALSO SHEET 2<br>IL 12.12.80 MD |
| 10 | ECO 1300<br>R34 WAS 680R<br>R48 - 82K<br>R66 WAS JOINED TO Q14, R19 NOW @<br>SOK MAE 87 BJ MD. |
| 11 | ECO 1667.<br>C28 ADDED.<br>7th AUG 81. MD |



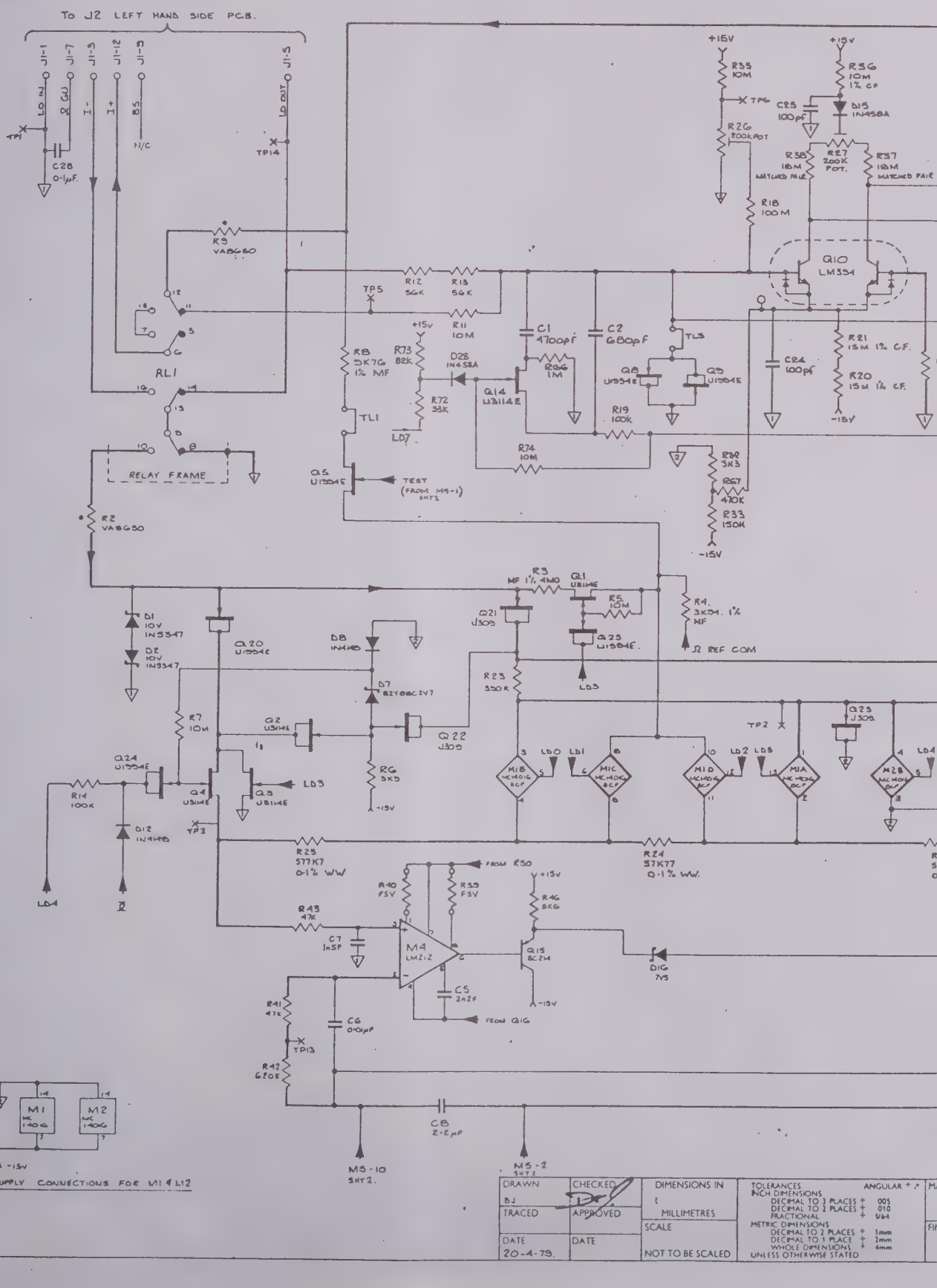




| | | | |
|---|---|---|---|
| datron ELECTRONICS LTD.. NORWICH. | | DRAWING SIZE | A1 |
| TITLE: OHMS PCB CIRCUIT 1061. | DRAWING No. 430331 | SHEET | 1 OF 2 |

DRAWING No. 430331.
FIRST USED ON 1061.

# THIRD ANGLE PROJECTION

DRAWN IN ACCORDANCE WITH BS 308

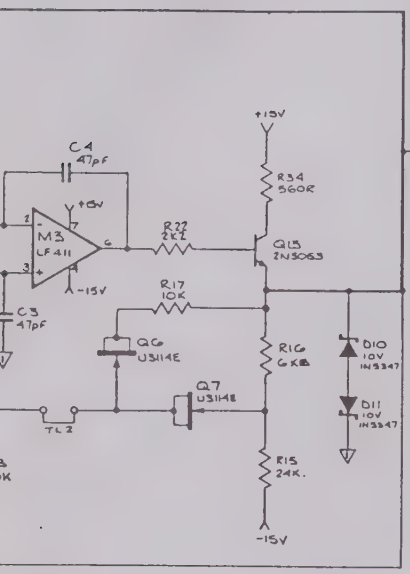


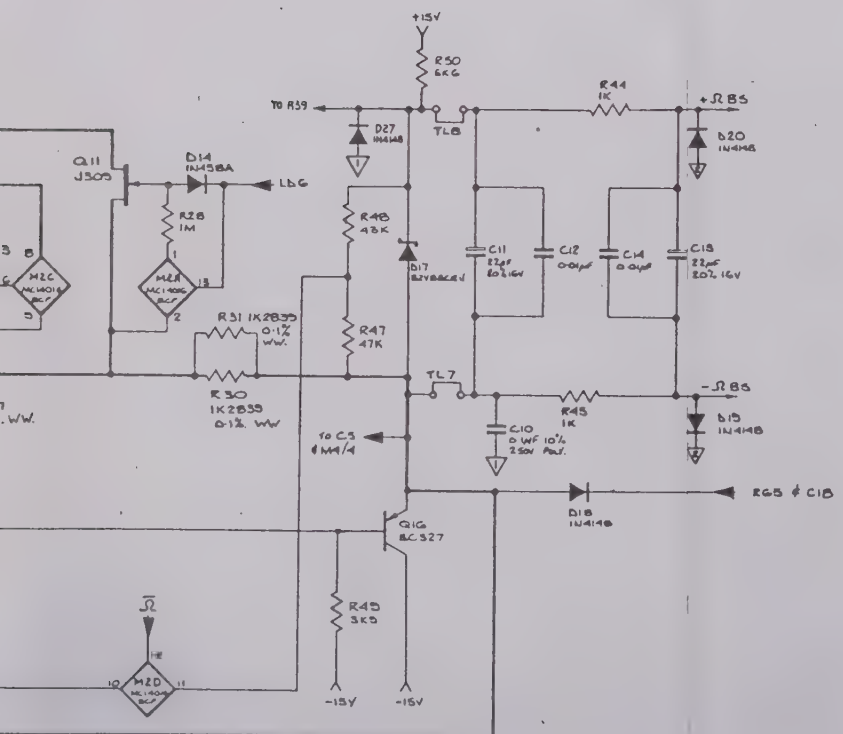

| DRAWN | CHECKED | DIMENSIONS IN | TOLERANCES | ANGULAR + ′ |
|---|---|---|---|---|
| BJ | | MILLIMETRES | INCH DIMENSIONS | |
| TRACED | APPROVED | | DECIMAL TO 3 PLACES ± .005 | |
| | | SCALE | DECIMAL TO 2 PLACES ± .010 | |
| DATE | DATE | | FRACTIONAL ± 1/64 | |
| 20-4-79. | | NOT TO BE SCALED | METRIC DIMENSIONS | |
| | | | DECIMAL TO 2 PLACES ± 1mm | |
| | | | DECIMAL TO 1 PLACE ± 2mm | |
| | | | WHOLE DIMENSIONS ± 4mm | |
| | | | UNLESS OTHERWISE STATED | |

| 5 | 6 | 7 |
|---|---|---|

ALL BURRS TO BE REMOVED

NOTES



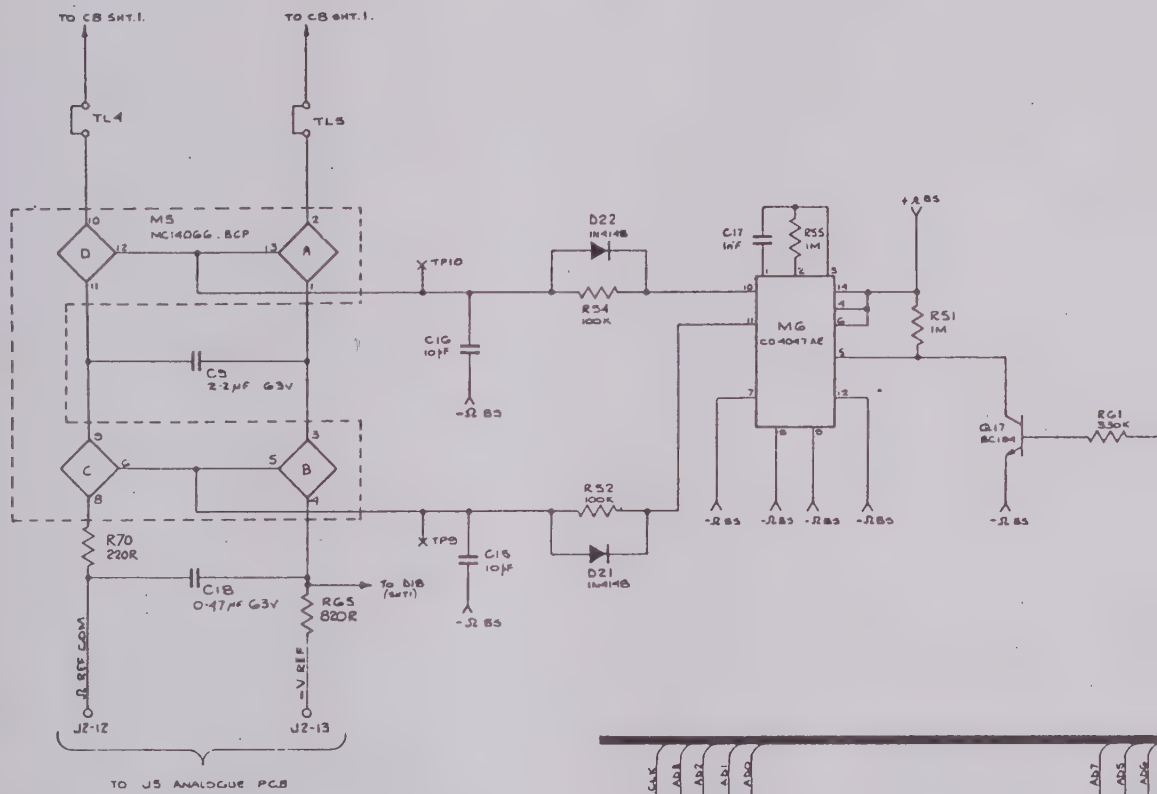

| ISS. | CHANGES |
|---|---|
| 1* | RELEASED. |
| 2 | D13 WAS IN4148. BJ<br>R56 = 1M. 4-9-79. AC<br>C13 = 0·1µF. |
| 3 | ECO 898. D24. BJ<br>DELETED 20-6-79.<br>ECO 908<br>D7, D8 NOW CZV7.<br>R6 10K NOW 5K9.<br>R15 15K NOW 24K. |
| 4 | ECO 930 RE-INSTATE D24<br>ECO 953 Q21, Q22 & R52<br>U1394E's NOW U309's<br>BJ 13-7-79. |
| 5 | ECO 1054 & 1002<br>Q12 DELETED<br>R32 WAS 2K7 .000278<br>R36 WAS 5K1 .0.63105<br>R56 WAS 15K .0.41828<br>R67 ADDED<br>PCB NOW ISS 4.<br>TL6 & TP7 DELETED<br>R21 F3.9 DELETED<br>R33 WAS 1M5 .000165<br>R66 & R68 ADDED<br>C24 & C25 ADDED<br>W.G.S. 6 FEB 80 |
| 6 | SEE SHEET 2 |
| 7 | ECO. 1124.<br>C7 WAS 3n3F<br>IL 3.6.80 |
| 8 | ECO. 1134<br>D27 ADDED.<br>IL 19.6.80 |
| 9 | ECO. 1176<br>R72. R73. R74. 1 D28 ADDED.<br>R10 DELETED.<br>R26 WAS 20k<br>R35 WAS 1M2<br>SEE ALSO SHEET 2<br>IL 12.12.80 |
| 10 | ECO 1300<br>R34 WAS 680R<br>R48 = 82K<br>R66 WAS JOINED TO Q14, R13 NOW to ⏚<br>30th MAR 81 BJ |
| 11 | ECO 1667,<br>C28 ADDED.<br>7th AUG 81. |

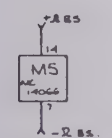
| | | | |
|---|---|---|---|
| RIAL —— | datron ELECTRONICS LTD.. NORWICH. | | DRAWING SIZE A1 |
| —— | TITLE OHMS PCB CIRCUIT 1001. | DRAWING No. 430331. | SHEET 1 OF 2 |

| DRAWING No |
|---|
| 430331. |
| FIRST USED ON |
| 1061 |

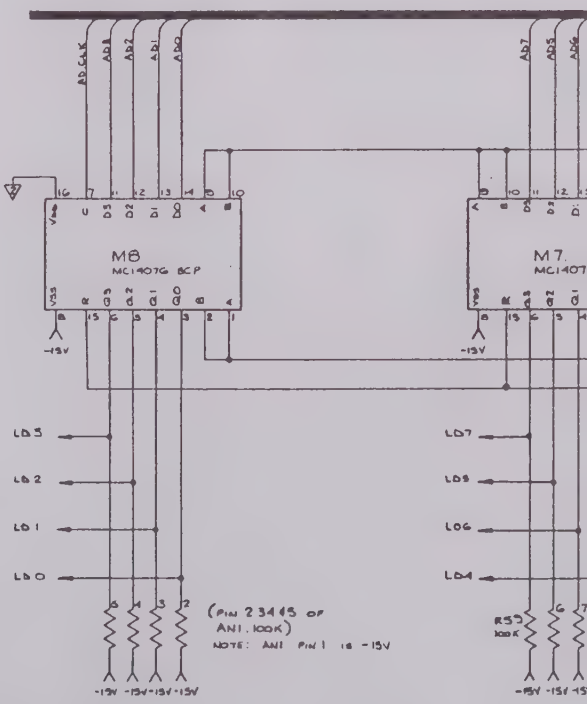
# THIRD ANGLE PROJECTION

DRAWN IN ACCORDANCE WITH BS 308




SUPPLY CONNECTIONS TO M5




## RANGE TRUTH TABLE

| | | LD0 | LD1 | LD2 | LD3 | LD4 | LD5 | LD6 | LD7 |
|---|---|---|---|---|---|---|---|---|---|
| RANGE | 10Ω | 0 | 0 | 0 | 0 | 0 | 0 | 1 | X |
| | 100Ω | 0 | 0 | 0 | 0 | 0 | 0 | 1 | X |
| | 1KΩ | 0 | 0 | 0 | 0 | 0 | 1 | 0 | X |
| | 10KΩ | 1 | 0 | 0 | 0 | 0 | 0 | 0 | X |
| | 100KΩ | 0 | 0 | 0 | 0 | 1 | 0 | 0 | X |
| | 1MΩ | 0 | 0 | 1 | 1 | 0 | 0 | 0 | X |
| | 10MΩ | 0 | 1 | 0 | 1 | 0 | 0 | 0 | X |
| FILTER | | X | X | X | X | X | X | X | 1 |
| Ω | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

LOGIC '0' = -15V
LOGIC '1' = 0V
LOGIC 'X' = 'DONT CARE' CONDITION

| DRAWN | CHECKED | DIMENSIONS IN | TOLERANCES | ANGULAR +.° |
|---|---|---|---|---|
| B J | | MILLIMETRES | INCH DIMENSIONS<br>DECIMAL TO 3 PLACES ± .005<br>DECIMAL TO 2 PLACES ± .010<br>FRACTIONAL ± 1/64 | |
| TRACED | APPROVED | SCALE | METRIC DIMENSIONS<br>DECIMAL TO 2 PLACES ± 1mm<br>DECIMAL TO 1 PLACE ± 2mm<br>WHOLE DIMENSIONS ± 4mm | |
| DATE 20-4-79 | DATE | NOT TO BE SCALED | UNLESS OTHERWISE STATED | |

5 | 6 | 7

ALL BURRS TO BE REMOVED

NOTES

| ISS. | CHANGES |
|---|---|
| 1 | RELEASED. |
| 2. | D23 WAS IN4148 B.J. RSG WAS 1M. ECO853 C13 = .01μF. 11-3-79. |
| 3 | ECO 838. D24 B.J. DELETED. 20-6-79. ECO 909. D7, CBV8 NOW C2V7. RS, 10K NOW 3K3. R15, 15K NOW 24K. |
| 4 | ECO 930 RE-INSTATE D23 ECO 933 Q21, 22 & 23 UNSPARES NOW J309's B.J. 13-7-79. |
| 5 | ECO 1054 & 1062 SEE SHT 1 FOR DETAILS W.G.B. 6 FEB 80 |
| 6 | ECO. 1109 C26 ADDED IL 21.4.80 |
| 7 | ECO. 1113. C26 WAS 1nF R69 ADDED. IL 3.6.80 |
| 8 | ECO. 1134 R70 ADDED IL 13.6.80 |
| 9 | ECO. 1176 R71 & C27 ADDED IL 12.12.80 |
| 10 | ECO 1300 RG5 WAS 2K7 SOTH WAS B2 BJ |
| 11 | SEE SHEET 1. |

+15V
RG2 6K1
D26 IN4148
Q15 BC214
D25 IN4148
RG3 22K
RL1
C20 1μF 35V
Q18 BC184
RS3 27K
RG0 12K
C19 680μF 35V
RS8 27K
-15V

TP8
+15V
J2-15
C23 10μF 25V
TP12
0V
J2-14
C21 10μF 25V
-15V
J2-16
TP11

ADO J2-1
AD1 J2-2
AD2 J2-3
AD3 J2-4
AD4 J2-5
AD5 J2-6
AD6 J2-7
AD7 J2-8
OP SEL CLK J2-9
AD CLK J2-10
N/C J2-11
TO J3 ANALOGUE P.C.B.

AD2
AD7
OP SEL CLK
RG4 33K
RG9 10K
RSG 820K
D23 IN4148
M9 MC14013 BCP
C26 100pF
C27 100nF
R71 10K
C22 0.01μF
R37 10K
-15V

(PAGE 6, 7 & 8 OF AN1, 100K)

TEST (TO 905 SHT1)

datron ELECTRONICS LTD. NORWICH.

DRAWING SIZE A1

TITLE: OHMS PCB CIRCUIT. 1061.

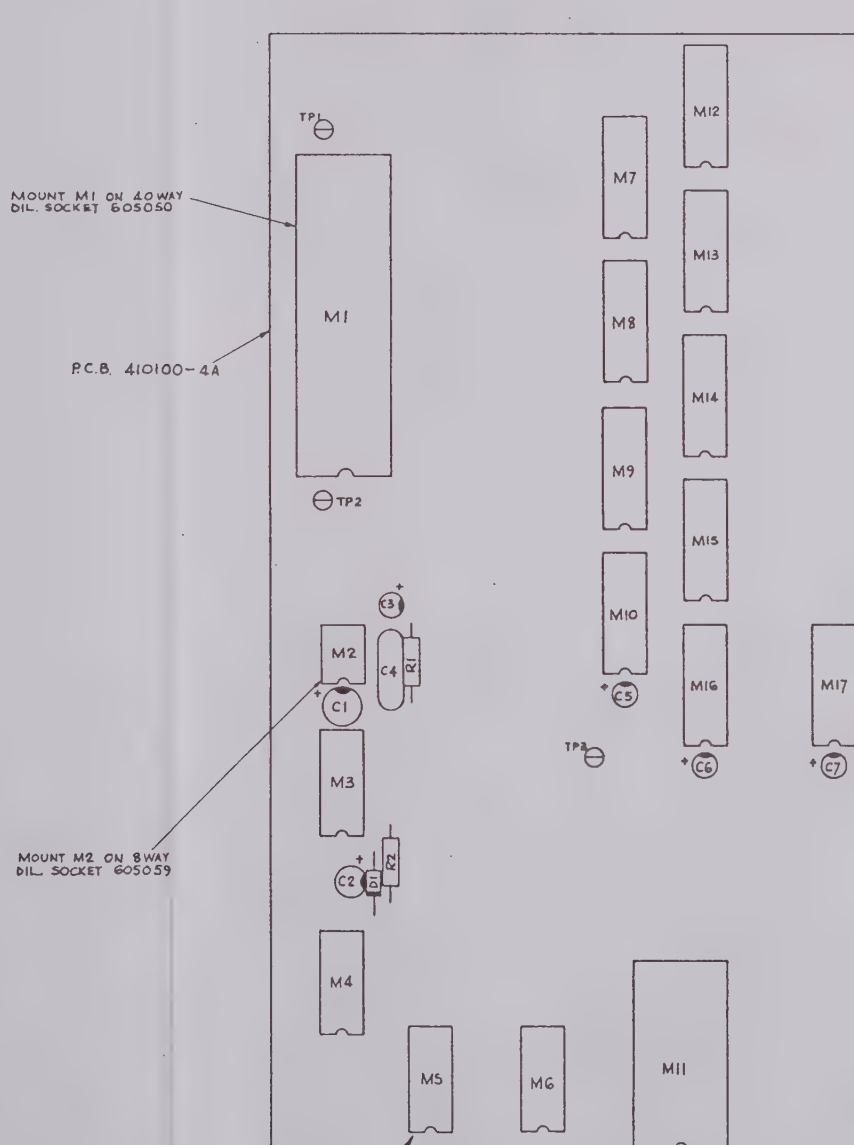
DRAWING No. 430331

SHEET 2 OF 2

DRAWING No.
400332
FIRST USED ON

# THIRD ANGLE PROJECTION

DRAWN IN ACCORDANCE WITH BS 308



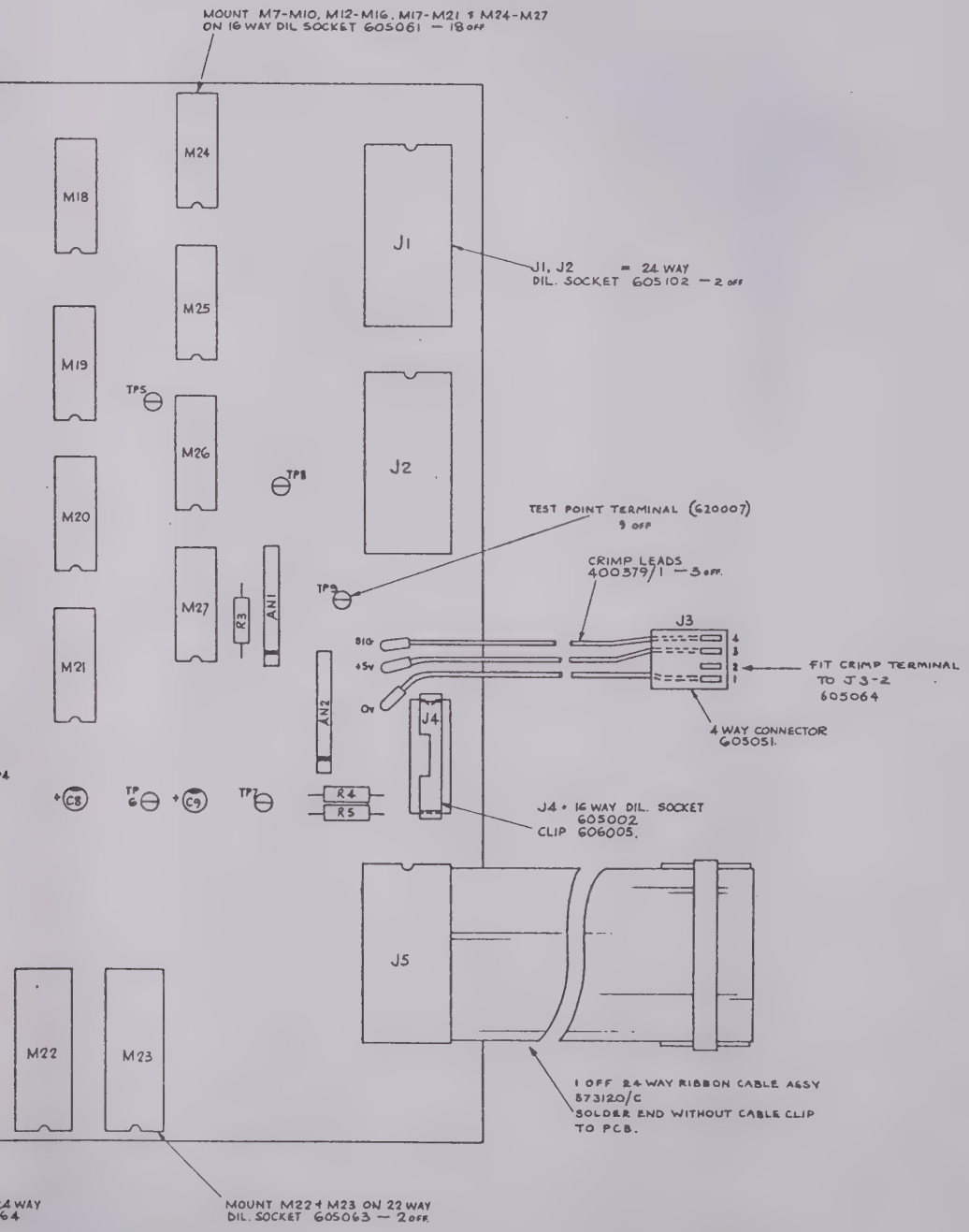

| | | | |
|---|---|---|---|
| DRAWN IL | CHECKED MJW | DIMENSIONS IN MILLIMETRES | TOLERANCES INCH DIMENSIONS DECIMAL TO DECIMAL TO FRACTIONAL METRIC DIMENSIO DECIMAL TO DECIMAL TO WHOLE DIME UNLESS OTHERWI |
| TRACED | APPROVED | SCALE 2:1 | |
| DATE 31.1.80 | DATE | NOT TO BE SCALED | |

5 | 6 | 7

ALL BURRS TO BE REMOVED

NOTES

| ISS. | CHANGES |
|---|---|
| 1 | RELEASED TO PROD'N IL 1.2.80 |
| A.J. 2 | ECO. 1078 TEST POINTS TP1- TP9 ADDED J3 PINS RE-ORGANISED PCB. WAS ISS 3. IL 27.2.80 |
| A.J. 3 | ECO. 1093 PARTS LIST CHANGE IL 26.3.80 |
| 4 | ECO. 1137 PARTS LIST CHANGE IL 29.7.80 |
| 5 | ECO. 1168 PARTS LIST CHANGE IL 16.12.80 |
| 6 | ECO 1198 605036 CRIMP ADDED TO J 4 JR 25.2.81 |
| 7 | ECO 1217 J5 WAS 24 WAY SOCKET. JR 18-3-81 |
| 8 | ECO. 1246 PARTS LIST CHANGE IL 4.11.81 |
| 9 | ECO 1253 J1 & 2 WERE 605064 JR 3-12-81 |
| 10 | ECO. 1403 PARTS LIST CHANGE TO M11 (ISS 4A TO 17) IL 24.11.82 |
| 11 | ECO. 1592 PCB WAS ISSUE 4 NYLATCHES REMOVED M11(EPROM) WAS ISS 17. IL 2.5.84 |




CIRCUIT DIAGRAM = 430332-2

ANGULAR ± °
CES ± .005
CES ± .010
± 1/64
CES ± 1mm
CE ± 2mm
VS ± 4mm
TED

MATERIAL ——

FINISH ——

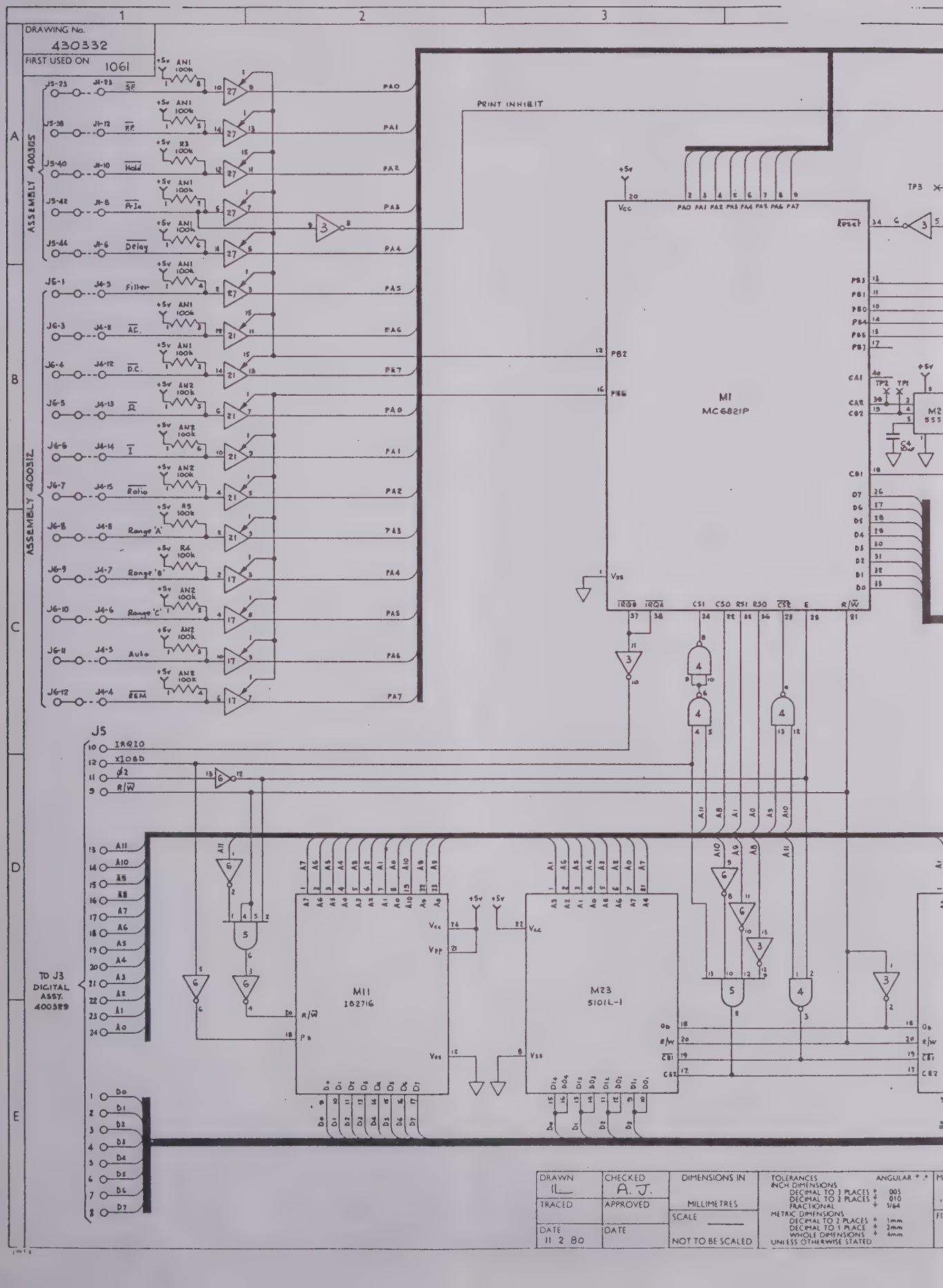
datron ELECTRONICS LTD. NORWICH.

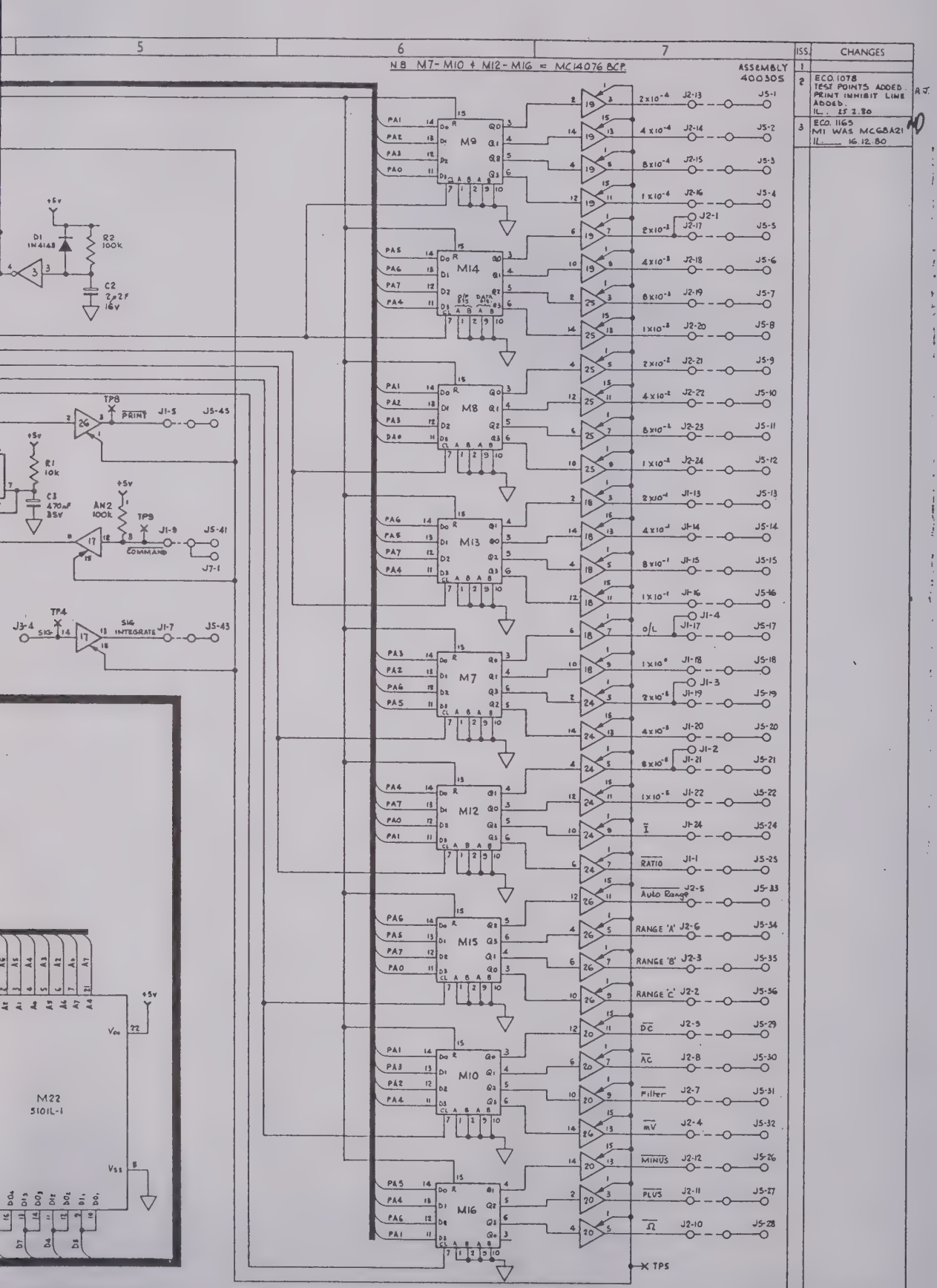
TITLE BCD/PROGRAM PCB. ASSY.

DRAWING No. 400332

DRAWING SIZE A1

SHEET 1 OF 4

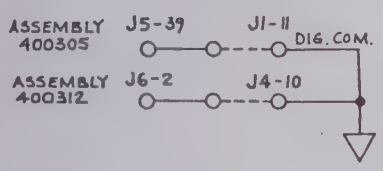

DRAWING No.
430332
FIRST USED ON
1061
ASSEMBLY 400305
ASSEMBLY 400312
PRINT INHIBIT
MI
MC6821P
M11
16271G
M23
5101L-1
J5
TO J3
DIGITAL
ASSY.
400329
PA0
PA1
PA2
PA3
PA4
PA5
PA6
PA7
PB0
PB1
PB2
PB3
PB4
PB5
PB6
PB7
IRQ10
X1080
Ø2
R/W
Vcc
Vss
Reset
CA1
CA2
CB1
CB2
D0
D1
D2
D3
D4
D5
D6
D7
DRAWN
IL
CHECKED
A. J.
TRACED
APPROVED
DATE
11 2 80
DATE
DIMENSIONS IN
MILLIMETRES
SCALE
NOT TO BE SCALED
TOLERANCES
ANGULAR + .°
INCH DIMENSIONS
DECIMAL TO 3 PLACES + .005
DECIMAL TO 2 PLACES + .010
FRACTIONAL + 1/64
METRIC DIMENSIONS
DECIMAL TO 2 PLACES + 1mm
DECIMAL TO 1 PLACE + 2mm
WHOLE DIMENSIONS + 4mm
UNLESS OTHERWISE STATED

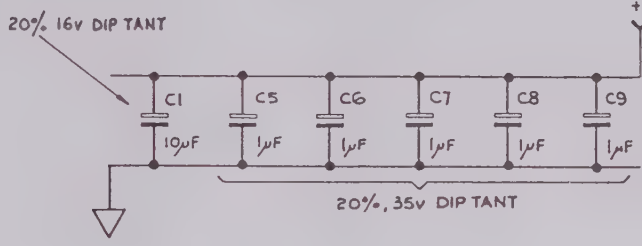


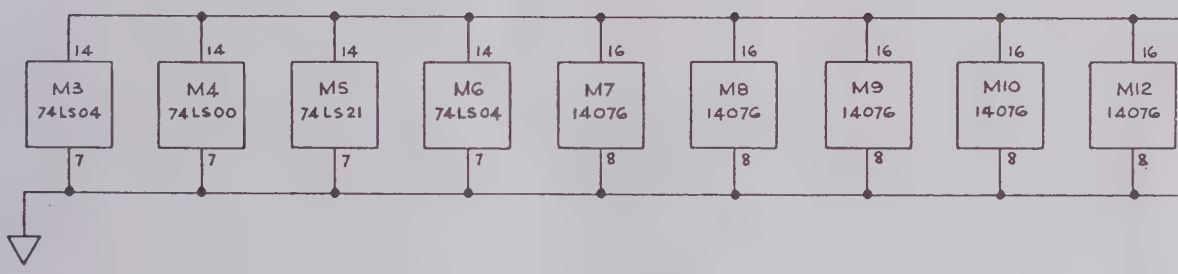

| | | | |
|---|---|---|---|
| TERIAL | datron ELECTRONICS LTD. NORWICH. | | DRAWING SIZE A1 |
| SH | TITLE BCD / PROGRAM | DRAWING No. 430332 | SHEET 1 OF 2 |

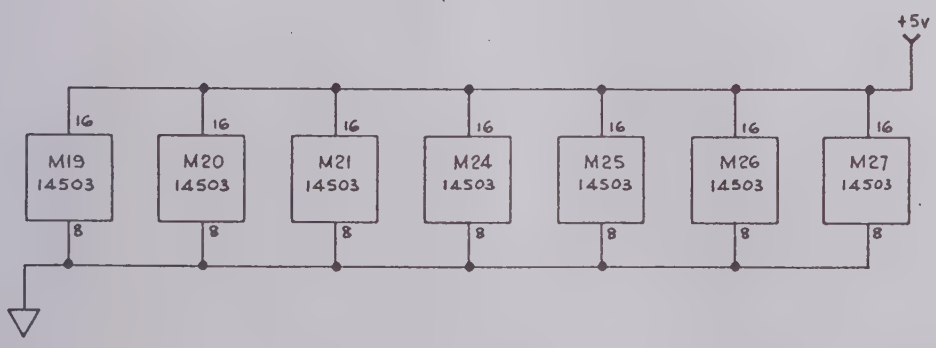
| DRAWING No. 430332 | THIRD ANGLE PROJECTION | ALL |
|---|---|---|
| FIRST USED ON 1061 | DRAWN IN ACCORDANCE WITH BS 308 | |

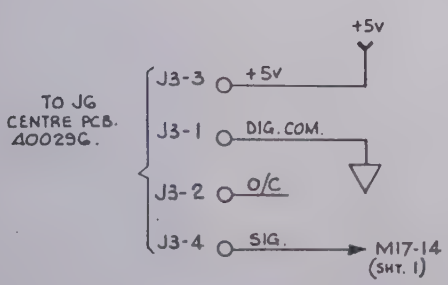
N.B. ALL RESISTORS SHOWN ON SHEET 1 = 5%, 1/4 W, CARBON FILM.



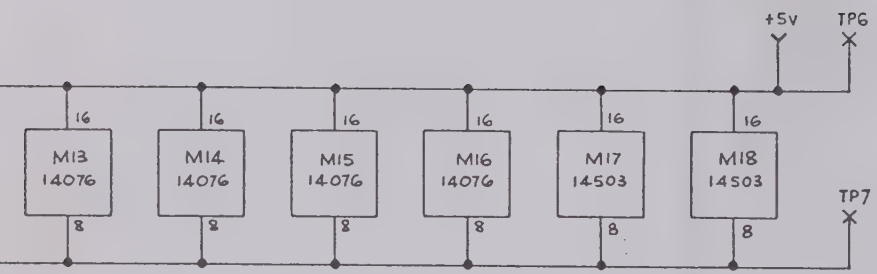




| DRAWN IL | DATE 11.2.80 | DIMENSIONS IN MILLIMETRES | METRIC DIMENSIONS ANGULAR ± ½° DECIMAL TO 2 PLACES ± ·1mm DECIMAL TO 1 PLACE ± ·2mm WHOLE DIMENSIONS ± ·4mm UNLESS OTHERWISE STATED | MATERIAL |
|---|---|---|---|---|
| CHKD. A.J. | DATE 15.2.80 | SCALE | | FINISH |
| APPD. | DATE | NOT TO BE SCALED | | |

| 4 | 5 | 6 |
|---|---|---|
| URRS TO BE REMOVED | | NOTES |

| ISS. | CHANGES |
|---|---|
| 1 | |
| 2 | TP6 & TP7 ADDED A.J. 22 2 80 |
| 3 | SEE SHEET 1 |




datron ELECTRONICS LTD. NORWICH.

DRAWING SIZE A2

TITLE BCD/PROGRAM

DRAWING No. 430332

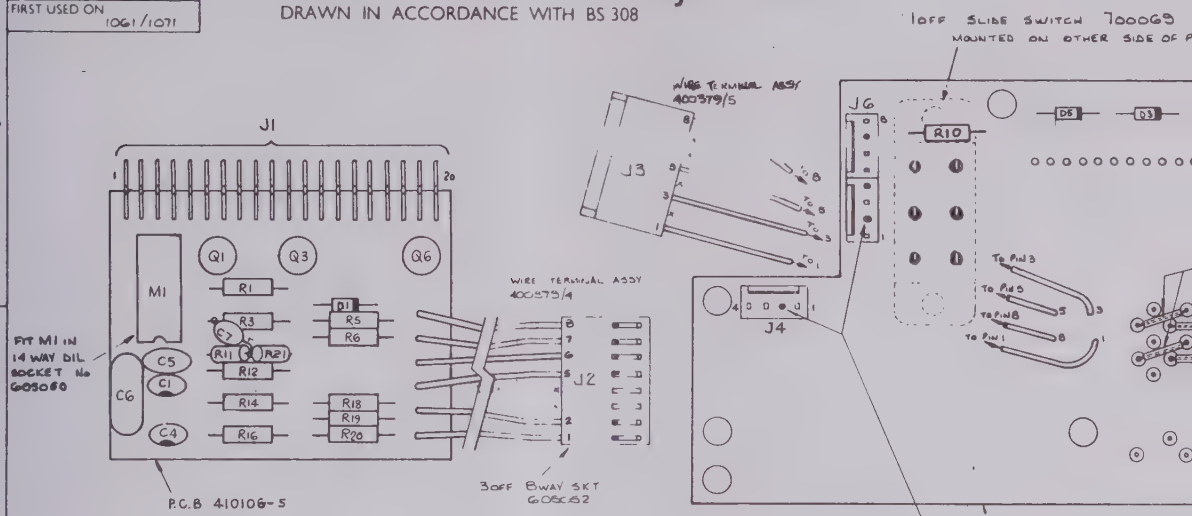
SHEET 2 OF 2

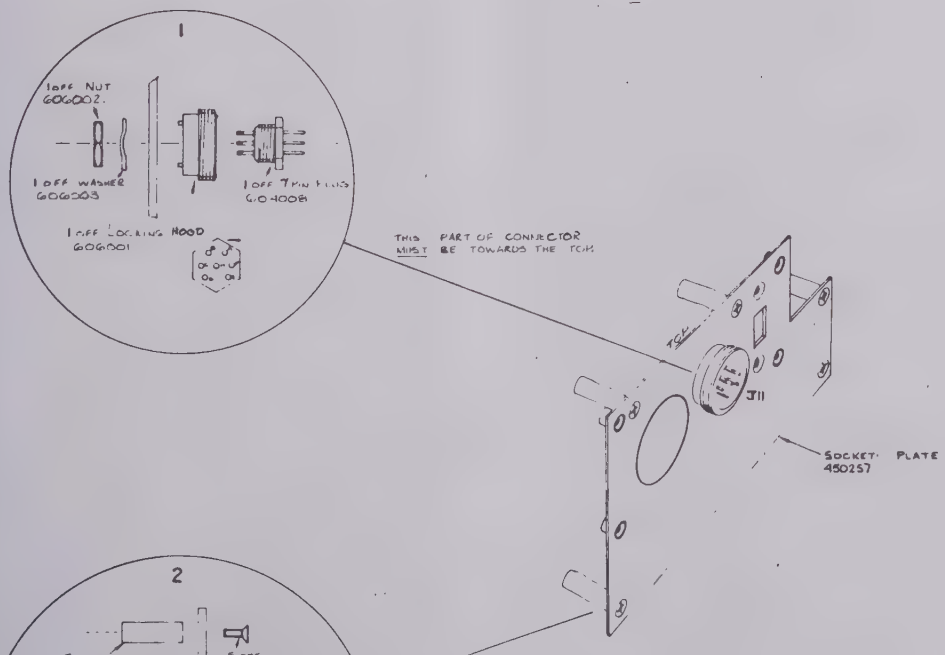
J.W 2042

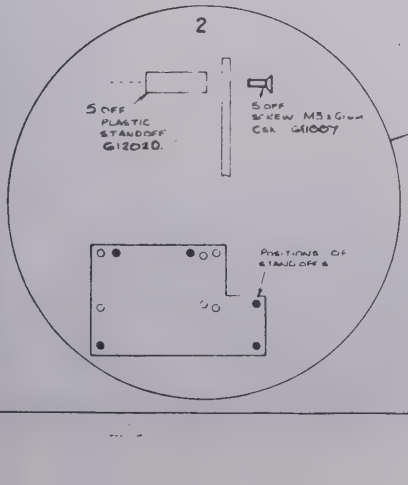
DRAWING No.
480386
FIRST USED ON
1061/1071

# THIRD ANGLE PROJECTION

DRAWN IN ACCORDANCE WITH BS 308





1
1 OFF NUT 606002.
1 OFF WASHER 606003
1 OFF TWIN PINS 610408
1 OFF LOCKING HOOD 606001
THIS PART OF CONNECTOR MUST BE TOWARDS THE PCB
J11
SOCKET PLATE 450257




PROCEDURE

1. ASSEMBLE THE
FIRST ENSURE
IS SECURED IN

2. ASSEMBLE THE
POSITION SHOWN

| | | | |
|---|---|---|---|
| DRAWN W.G.SMITH | CHECKED MJD | DIMENSIONS IN MILLIMETRES | TOLERANCES INCH DIMENSIONS DECIMAL TO 3 DECIMAL TO 2 FRACTIONAL METRIC DIMENSIONS DECIMAL TO 2 DECIMAL TO 1 WHOLE DIMEN UNLESS OTHERWISE |
| TRACED | APPROVED | SCALE NOT TO BE SCALED | |
| DATE 10-MAY-79. | DATE 17 MAY 79. | | |

ALL BURRS TO BE REMOVED

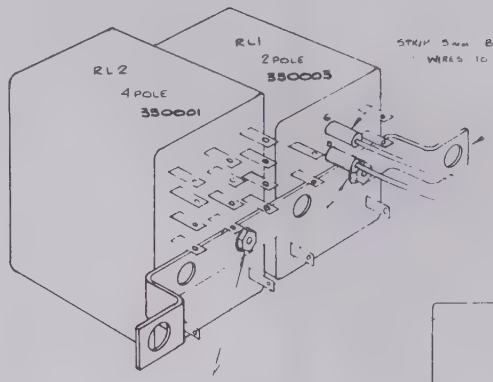
## NOTES

IMPORTANT

FOR CRIMP PINS USE TOOL Nº HTR22G2A

| CHANGES | |
|---|---|
| 1 | RELEASED TO PRODUCTION 01.5.79 ECO 972 & 995. RL1 & RL2 WERE 1TT. |
| 2 | 450257 WAS 450188 HOLE PLUG 630001 DELETED BJ. 25-10-79 |
| 3 | ECO 981. 6-11-79 R11 & R12 ADDED MI & SOCKET ADDED. 1OFF 400379/4 ADDED. DELETE D5. PCB'S UPDATED. BJ. |
| 4 | ECO 1034. BJ R12 MOVED & WAS 33K. 2-1-80. |
| 5 | ECO 1085 POLARISING KEY FOR J3 REMOVED. J5 REMOVED - SEE SHEET 2. 22.4.80 |
| 6 | ECO 1167, 1154 R10, R14, R16, R18, R19, R20 C4 C5 C6 D5 D6 D7 & Q6 ADDED 23 9 80 |
| 7 | ECO 1199 R10 WAS 12K JR 24.2.81 |
| 8 | ECO 1328 R11 WAS 18K. C4 WAS 6μ8. R21 AND C7 ADDED. JR 12.5.82 |
| 9 | ECO 1654 R16 WAS 3k3. MI WAS MCM1038CA 21 5 85 |
| 9.0 | ECO 1984 UPDATED TO ENG. PROC. 11 26.5.86 |

FIT SIX LINKS SLEEVED AS SHOWN
LINKS 22 SWG COPPER WIRE 340002
SLEEVING 590004

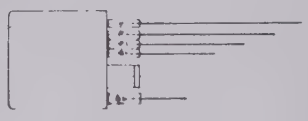



STRIP 3mm BEFORE SOLDERING, WIRES TO PIN 8 & 9

1 OFF RELAY BRACKET 450241.

1 OFF SHELD 3mm Ø PT CRIMP PINS 605057.

2 OFF BSA NUTS 615001
2 OFF SHAKEPROOF WASHER 615005

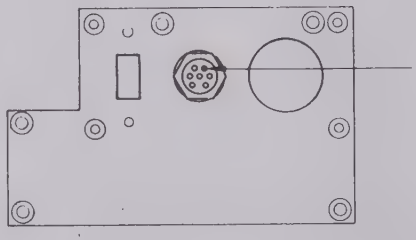


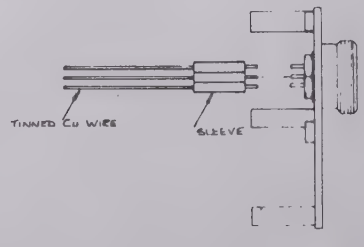
PROCEDURE

1. FIT BOTH RELAYS TO THE BRACKET (AS SHOWN) WITH WASHER & NUT
2. ON PINS 6 & 9 OF THE TWO POLE RELAY SOLDER 70mm OF WHITE WIRE PART No 512999 SLEEVE WITH ½ PIECE OF 580001 (1¢ 10mm).
3. ALL OTHER CONTACTS ARE TO HAVE APPROXIMATELY 60mm OF 22 SWG TINNED COPPER WIRE PART Nº 540002 & SLEEVE EACH WITH ½ PIECE OF 590001.
4. STAGGER LENGTHS OF TINNED COPPER WIRE, TO ASSIST FITTING TO PCB, AS SHOWN.

PIN PYE PLUG
THAT THE CONNECTOR
THE POSITION SHOWN.

STANDOFF'S IN THE
Y THE LARGE DOTS




PROCEDURE

1. ALL PINS ON THE SOCKET EXCEPT PIN B (SHOWN SOLID), SOLDER ON 60mm OF TINNED COPPER WIRE PART Nº 540002 & SLEEVE ALL JOINTS WITH APPROXIMATELY 10mm OF SLEEVING PART No 590001.

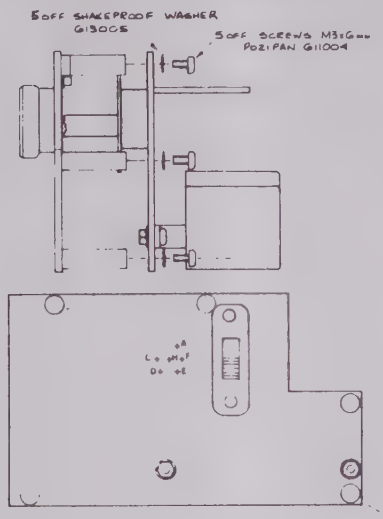
THERE SHOULD NOW BE 6 WIRES.

| | | | |
|---|---|---|---|
| ANGULAR + ° | MATERIAL | datron ELECTRONICS LTD. NORWICH. | DRAWING SIZE A1 |
| LACES + .005<br>LACES + .010<br>+ 1/64 | | | |
| LACES + 1mm<br>LACE + 2mm<br>ONS + 4mm<br>TATED | FINISH | TITLE: REAR INPUT ASSY | DRAWING No. 480386 — SHEET 1 OF 2 |

DRAWING NO.
4803866
FIRST USED ON
1061/71

# THIRD ANGLE PROJECTION

DRAWN IN ACCORDANCE WITH BS 308




3./ BOTTOM VIEW SHOWS THE HOLES IN THE PCB (INDICATED BY CROSSES). THESE HOLES ARE FOR THE WIRES FROM THE 7 PIN SOCKET

IT IS A SUGGESTION THAT THE WIRES ARE STAGGERED TO MAKE ASSY EASIER (AS WIRING THE RELAYS).

PROCEDURE.

① THE WIRES SHOULD LINE UP WITH THE APPROPRIATE HOLES. IE. WIRE FROM PIN A OF SOCKET SHOULD BE INSERTED INTO HOLE 'A', WIRE FROM PIN 'C' TO HOLE 'C' AND SO ON.

② WHEN THE WIRES ARE INSERTED IN THE APPROPRIATE HOLES. SECURE THE 2 ASSY'S TOGETHER WITH THE M3x6mm POZI PAN SCREWS & SHAKEPROOF WASHERS, SCREWED IN THE 5 STANDOFFS. (AS DETAILED)

③ LIGHTLY PULL ON THE TIN COPPER WIRES SO THE WIRE IS TAUT; THEN SOLDER & CROP IN THE USUAL MANNER.

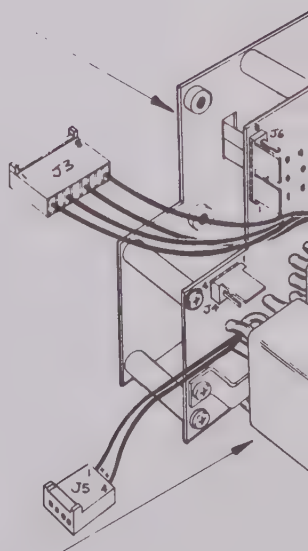
1./ SKETCH BELOW SHOWS THE 2 RELAY & BRACKET ASSEMBLY (FROM SHEET 1). THE CROSSES INDICATE HOLES IN THE PCB INTO WHICH THE WIRES FROM THE RELAYS ARE INSERTED

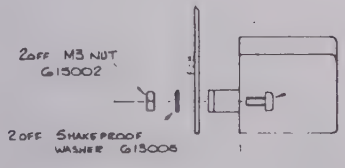
PROCEDURE

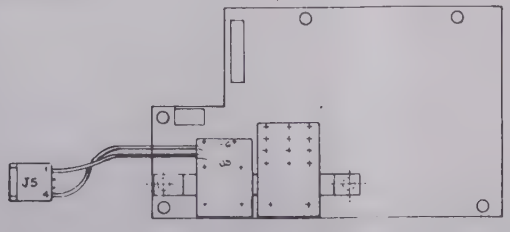
① INSERT THE WIRES INTO THE APPROPRIATE HOLES IN THE PCB (WIRES CUT AT DIFFERENT LENGTHS TO AID ASSEMBLY).

② WHEN THE WIRES ARE ALL IN PLACE SECURE THE BRACKET TO THE PCB USING THE SCREWS, WASHERS & NUTS SHOWN BELOW.

③ SOLDER & CROP WIRES IN THE USUAL MANNER. INSERT THE CRIMP PINS INTO SOCKET J5 PIN 6 OF RELAY TO PIN 4 OF J5 & PIN 3 TO PIN 1 AS SHOWN BELOW




| | | | |
|---|---|---|---|
| DRAWN W G SMITH | CHECKED MJD | DIMENSIONS IN MILLIMETRES | TOLERANCES INCH DIMENSIONS DECIMAL TO 3 PL DECIMAL TO 2 PL FRACTIONAL METRIC DIMENSIONS DECIMAL TO 1 PL DECIMAL TO 1 PL WHOLE DIMENSI UNLESS OTHERWISE ST |
| TRACED | APPROVED | SCALE NOT TO BE SCALED | |
| DATE 10 MAY 79. | DATE 11 MAY 79. | | |

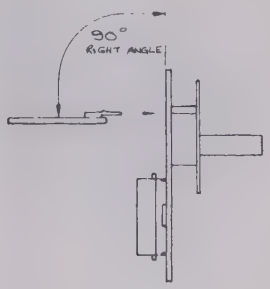
5 6 7

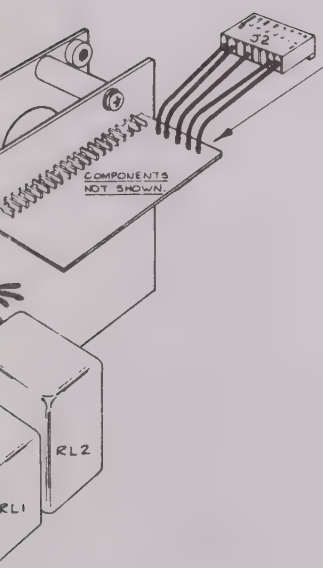
ALL BURRS TO BE REMOVED

NOTES

| | | |
|---|---|---|
| A | RELEASED TO PRODUCTION 17 MAY 78 W.O.S | |
| 1 | | |
| 2 | SEE SHEET 1. B.J 25-10-79. | M |
| 3 | SEE SHEET 1 6.11.1980 | M |
| 4 | SEE SHEET 1. 2-1-80 | M |
| 5 | ECO. 1085 J3 WAS 2 WAY CONN. IL 22.4.80 | M |
| 6 | SEE SHEET 1 23 9 80 | M |
| 7 | SEE SHEET 1 24 2 81 | M |
| 8 | SEE SHEET 1 12.5.82 | M |
| 9 | SEE SHEET 1 21.5.85 | M |
| 9.0 | ECO 1584 UPDATED TO ENG PROC. 11 IL 26.3.86 | M |

2. INSERT CONNECTORS AS SHOWN.
SOLDER ALL 20 AMP PINS & CROP LEGS IN USUAL MANNER
THE BOARD IS TO BE AT 90° WHEN SOLDERED IN.




NISHED ASSEMBLY.

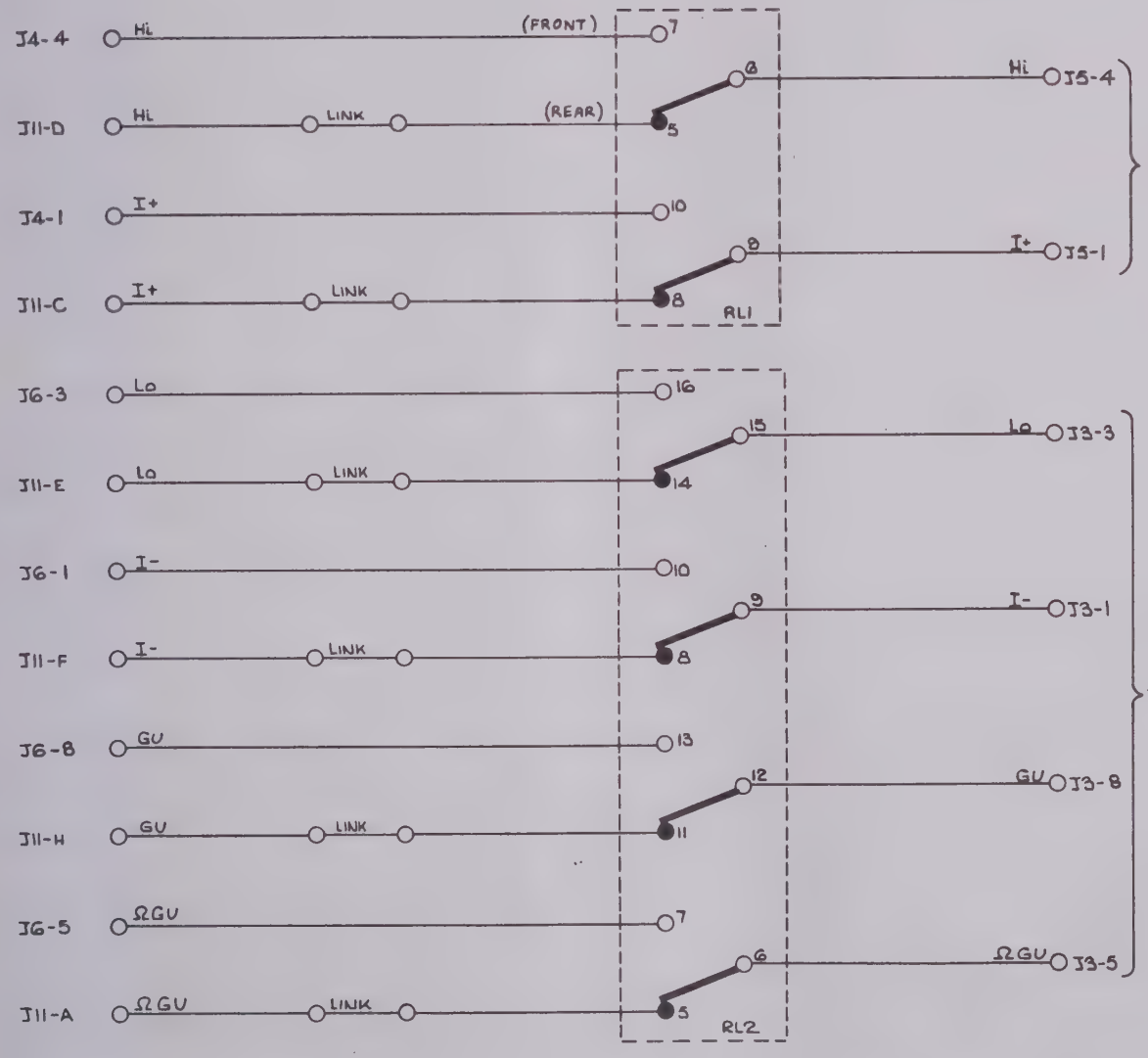
| | | | | |
|---|---|---|---|---|
| ANGULAR + ° | MATERIAL | datron ELECTRONICS LTD. NORWICH. | | DRAWING SIZE A1 |
| + 005 + 010 + 1/64 | FINISH | TITLE REAR INPUT ASSY | DRAWING No. 480386 | SHEET 2 OF 2 |
| + 1mm + 2mm + 4mm | | | | |

| DRAWING No. |
| --- |
| 430386 |
| FIRST USED ON |
| 1061/1071 |

# THIRD ANGLE PROJECTION

DRAWN IN ACCORDANCE WITH BS 308

ALL BU




NOTES.

1. J4 & J6 ARE FROM FRONT PANEL TERMINALS.
2. J11 IS THE REAR INPUT SOCKET ON REAR PANEL.

UNUSED PINS.

J2 - 3 & 4.
J3 - 2, 3, 5 & 7
J4 - 2, 3
J5 - 2, 3
J6 - 2, 3, 5 & 7

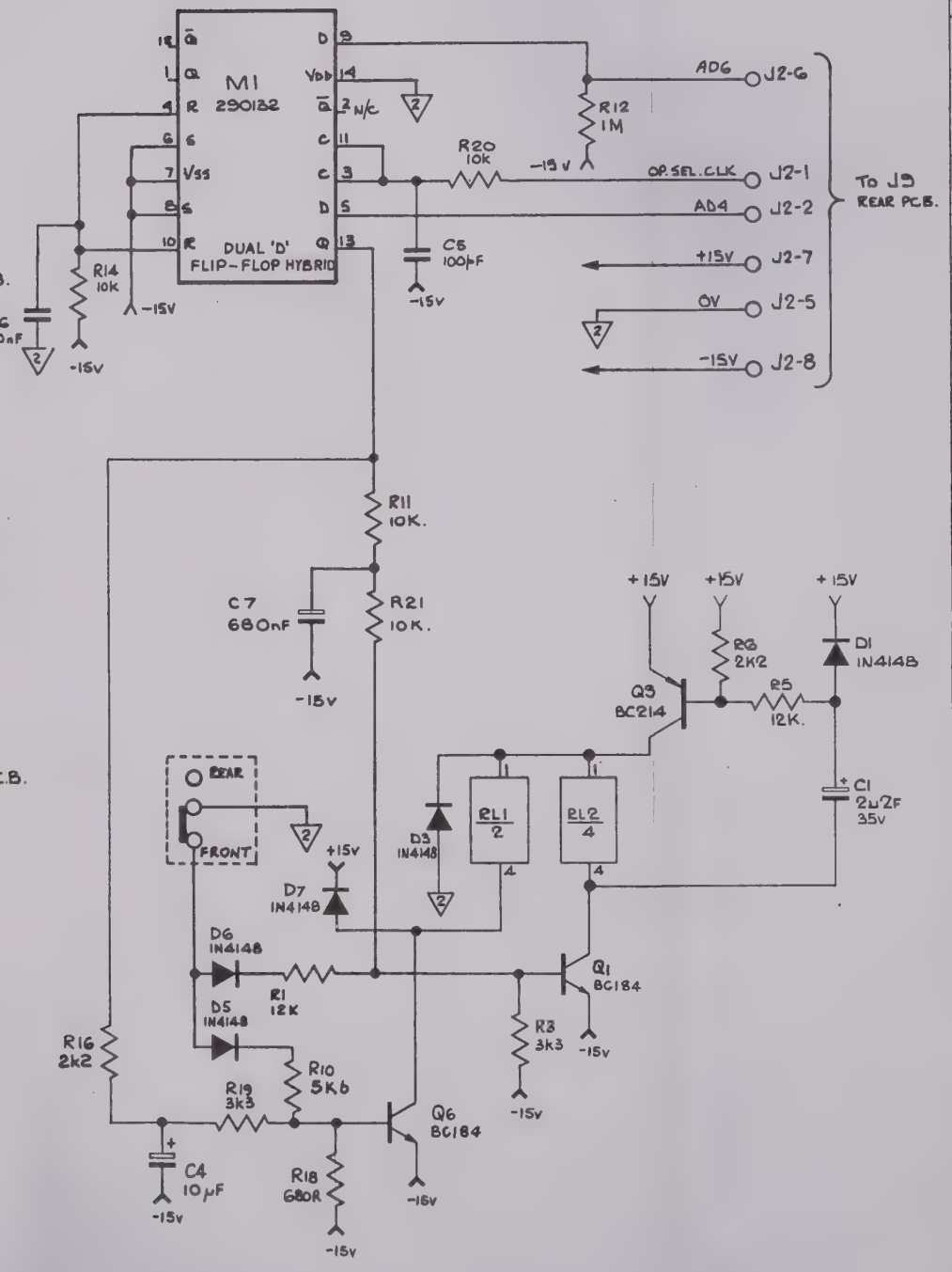
| DRAWN | CHECKED | DIMENSIONS IN | TOLERANCES ANGULAR ± ½° | MATERIAL |
| --- | --- | --- | --- | --- |
| W.G. SMITH | | | INCH DIMENSIONS | |
| TRACED | APPROVED | MILLIMETRES | DECIMAL TO 3 PLACES ± .005 | |
| | | SCALE | DECIMAL TO 2 PLACES ± .010 | |
| DATE | DATE | | FRACTIONAL ± 1/64 | FINISH |
| 8 MAY 79 | 17 MAY 79 | NOT TO BE SCALED | METRIC DIMENSIONS | |
| | | | DECIMAL TO 2 PLACES ± 1mm | |
| | | | DECIMAL TO 1 PLACE ± 2mm | |
| | | | WHOLE DIMENSIONS ∓ 4mm | |
| | | | UNLESS OTHERWISE STATED | |

J W 1162

RRS TO BE REMOVED

NOTES

| ISS. | CHANGES |
|---|---|
| A | |
| 1 | RELEASED TO PRODUCTION 17-MAY 79 W.G.S. |
| 2 | ECO 981. BJ<br>M1 ADDED<br>R11 "<br>R12 "<br>D5 DELETED.<br>6-11-79 |
| 3 | ECO 1034. B.J.<br>R12 WAS JOINED BETWEEN J2-G & M1-14. 2-1-80. |
| 4 | ECO 1085<br>BS- BETWEEN J4-1 & J5-1 REMOVED.<br>PINS OF J4 & J5 RE-NUMBERED FOR 4WAY CONNECTORS.<br>IL. 22.4.80 |
| 5 | ECO. 1167. 1154,<br>R1 WAS 18K.<br>R10. R14. R16. R18. R20. C4. C5. C6. D5. D6. D7 & Q6 ADDED.<br>IL. 25.9.80 |
| 6 | ECO 1199<br>R10 WAS 12K<br>JR 24.2.81 |
| 7 | ECO 1328<br>C4 WAS 6μ8F<br>R11 WAS 18K<br>R21 AND C7 ADDED.<br>JR. 13.5.82 |
| 8 | ECO 1654<br>R16 WAS 3k3<br>M1 WAS MC14013<br>IL. 21.5.85 |
| 9.0 | ECO 1984<br>UPDATED TO ENG PROC. 11<br>IL. 26.3.86 |




datron ELECTRONICS LTD. NORWICH.

DRAWING SIZE A2

| | DRAWING No. | SHEET |
|---|---|---|
| REAR INPUT CIRCUIT DIAGRAM. | 490386 | 1 OF 1. |

DRAWING No.
480402
FIRST USED ON 1061/1071

# THIRD ANGLE PROJECTION

DRAWN IN ACCORDANCE WITH BS 308

NOTE. WIRES OF J2 SOCKET TO BE AS SHOWN

GUARD SHIELD 450249 TO BE SECURED WITH M3 x 6 mm POZI-CSK SCREWS G1007 3 OFF TO M3 HEX STANDOFFS

ALL TEST LINKS TO BE FORMED AS TEST POINTS

BRASS STRIP 85mm LONG
N.B STRIP SHOULD BE SOLD
AS CLOSE AS POSSIBLE TO
HAND SIDE OF COPPER 'LA
SHOWN). ENSURE THAT
DOES NOT ENCROACH ON A
AROUND HEX STANDOFF
STRIP SHOULD ALSO BE 3.0mm
OF BOARD TO CLEAR PCB TRAC

PCB 410136-9

4 OFF FSV TERMINAL
602001
(R20, R36)

NOTE TL1, 2, 3, 4 AND ALL NYLATCHES TO BE FITTED AFTER ATE.

1 OFF 16 WAY RIBBON CABLE ASSY 571095/C SOLDER END WITHOUT CABLE CLIP TO PCB

TEST POINTS & TEST LINKS USE 22 SWG BTC WIRE 540002

R7 IS REMOVED WHEN BOARD IS USED IN 1061

MOUNT M6 ON 'BREAKAWAY' TERMINAL STRIPS
602004 - 16 OFF

MOUNT M3 AND M7 ON 16 WAY DIL SOCKET - 2 OFF
605061

MOUNT M4 ON 16 WAY DIL HIGH PROFILE SKT 605012B

MOUNT M5 ON 14 WAY DIL SOCKET
605060

* NYLATCH GROMMET
617011 - 4 OFF

* NYLATCH PLUNGER
617010 - 4 OFF
NB FIT FROM COMPONENT SIDE OF PCB

SECTION A-A

| | | | |
|---|---|---|---|
| DRAWN IL | CHECKED RL | DIMENSIONS IN MILLIMETRES | TOLERANCES INCH DIMENSIONS DECIMAL TO 1 PL DECIMAL TO 2 PL FRACTIONAL |
| TRACED | APPROVED | SCALE 2:1 | METRIC DIMENSIONS DECIMAL TO 2 P. DECIMAL TO 1 P. WHOLE DIMENSI |
| DATE 22 8 79 | DATE 3.9.79 | NOT TO BE SCALED | UNLESS OTHERWISE ST |

ALL BURRS TO BE REMOVED

## NOTES

1 DO NOT FIT R7 FOR 1061 MODELS

| ISS | CHANGES |
|---|---|
| 25 | ECO 2015<br>PCB WAS ISSUE 4<br>R41-R43, Q9 DELETED.<br>R130-R132 C80-C82 C84-C87 AND 2 OFF FSV TERMS ADDED (FOR R36)<br>R39 WAS 100k<br>R40 WAS CR25 TYPE<br>R61/R62 WERE CR25.<br>IL 8.10.85 |
| 26 | ECO 2105<br>PARTS LIST CHANGE<br>IL 3.2.86 |
| 27 | ECO 2164<br>PARTS LIST CHANGES<br>IL 13.3.86 |
| 27.0 | ECO 1984<br>UPDATED TO ENG. PROC II<br>IL 7.4.86 |
| 27.1 | ECO 2556<br>PCB UPDATED FROM ISSUE 8. INCORPORATES C61, C62 & C63, WHICH CHANGE TYPE<br>B.S.J. 10. APR 87. |

R134 CONNECTED IN SERIES WITH C57 & SOLDERED INTO CLOVERLEAF AS SHOWN.

'A'

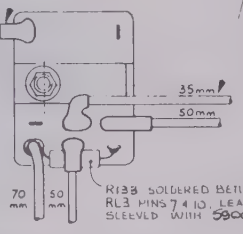
SLEEVE ALL SOLDERED JOINTS WITH HALF PIECE OF 590001

ALL WIRES TO RELAY PINS 7/-2 PTFE INSULATED WHITE 512999.

2 OFF SOLDER TERMINAL 620003

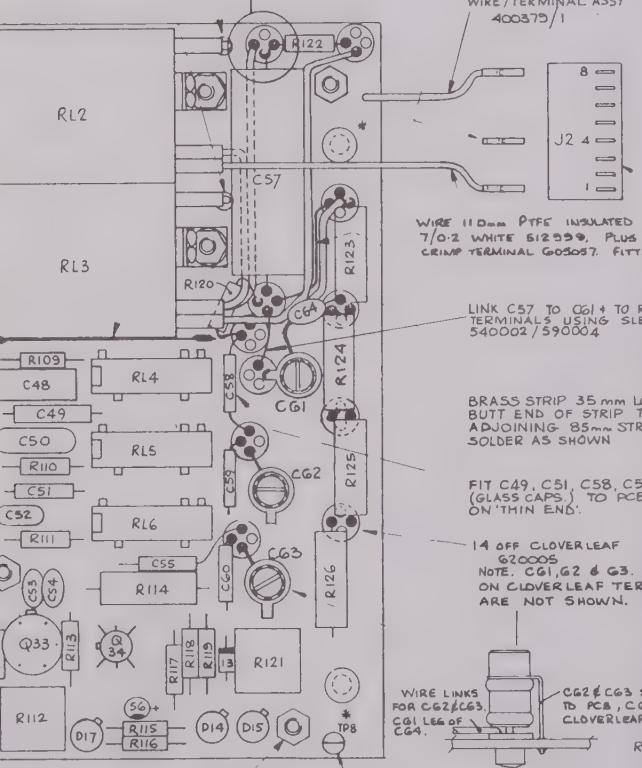
CRIMP TERMINAL (FOR BLANKING ONLY) 605056

WIRE/TERMINAL ASSY 400379/1




R133 SOLDERED BETWEEN RL3 PINS 7 & 10. LEADS SLEEVED WITH 590001

VIEW ON BASE OF RELAY RL3

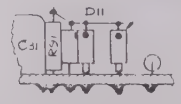



8 WAY POLARISED SOCKET 605052

WIRE 110mm PTFE INSULATED 7/0.2 WHITE 512999, PLUS GOLD CRIMP TERMINAL 605057. FITTED AS SHOWN

LINK C57 TO C61 & TO R123 VIA CLOVERLEAF TERMINALS USING SLEEVED LINKS 540002/590004

N.B. ENSURE THAT IDENT MARK IS AT TOP OF D11 AS SHOWN




VIEW IN DIRECTION OF ARROW 'B'

BRASS STRIP 35mm LONG BUTT END OF STRIP TO ADJOINING 85mm STRIP AND SOLDER AS SHOWN

FIT C49, C51, C58, C59, C60 (GLASS CAPS.) TO PCB MOUNTED ON 'THIN END'.

14 OFF CLOVERLEAF 620005

NOTE. C61, C62 & C63. ARE MOUNTED ON CLOVERLEAF TERMINALS BUT ARE NOT SHOWN.



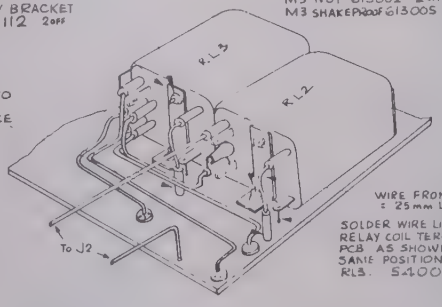
WIRE LINKS FOR C62/C63. C61 LEG OF C64.

C62 & C63 SOLDER DIRECT TO PCB, C61 SOLDER TO CLOVERLEAF AS SHOWN.

RELAY BRACKET 459112 2OFF

3-48 UNC NUT 615005 2OFS
M2.5 WASHER 613014 2OFF

M3x8 P/PAN SCREW 611016 2OFF
M3 NUT 615002 2 OFF
M3 SHAKEPROOF 613005 2OFF




WIRE FROM RL2 PIN 1 = 25mm LG

SOLDER WIRE LINK BETWEEN RELAY COIL TERMINAL & PCB AS SHOWN (IN SAME POSITION ON RL2 & RL3. 540002

3OFF M3 STANDOFF 612021
SECURE FROM UNDERSIDE WITH M3x8 P/PAN SCREW 611016 3OFF M3 SHAKEPROOF 613005 3OFF

TEST POINT TERMINAL 620007 7 OFF.

SOLDER WIRE ENDS TO SOLDER TERMINALS & SLEEVE WITH ½ PIECE OF 590001

VIEW IN DIRECTION OF ARROW 'A'
SHOWING ONLY RELAY WIRING

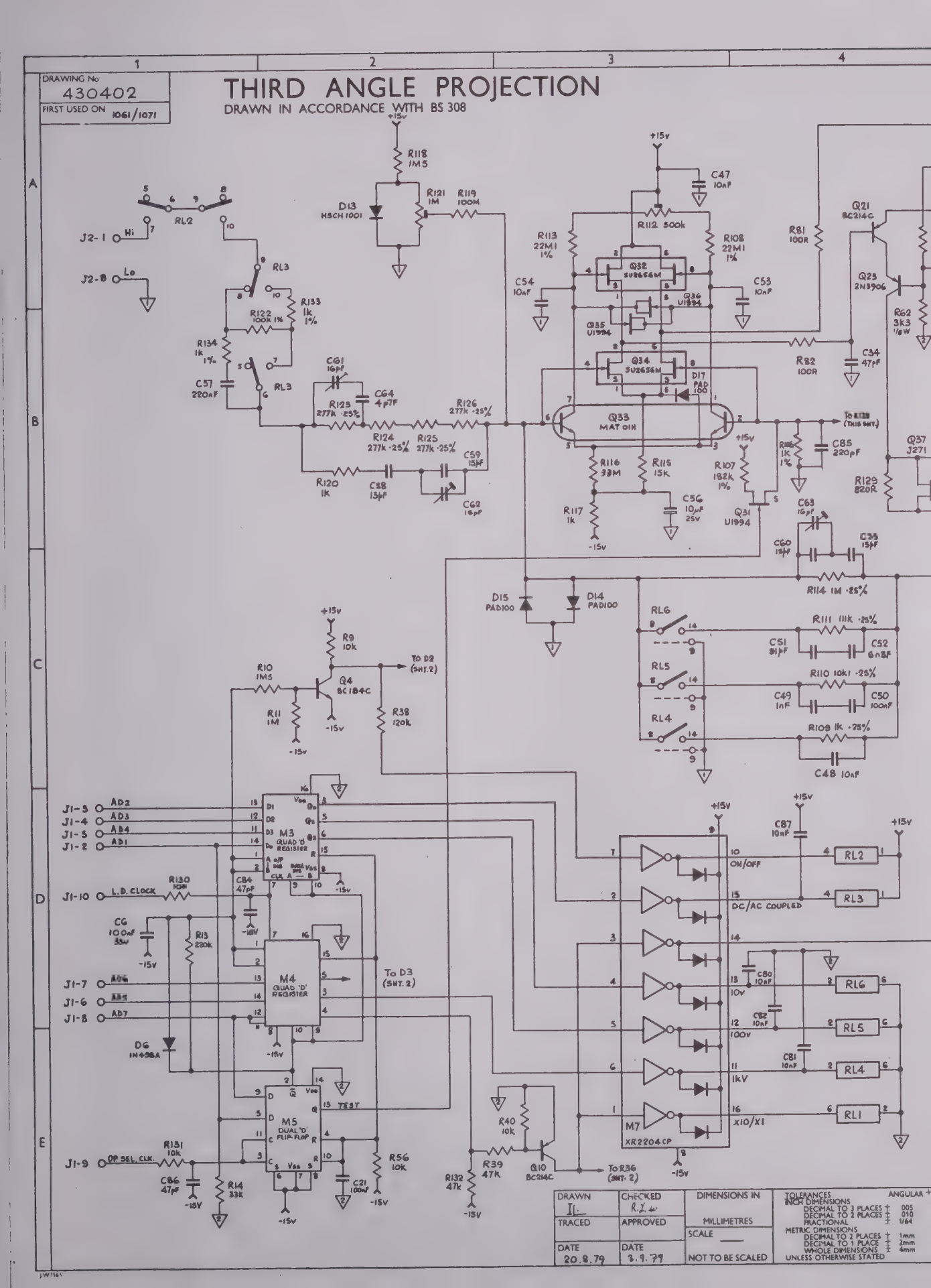
| | | | |
|---|---|---|---|
| ANGULAR ± 1° | MATERIAL: AS PARTS LIST | datron ELECTRONICS LTD. NORWICH. | DRAWING SIZE: A1 |
| UNS ± .010 ± 1/64 | FINISH: ——— | TITLE: A.C. PCB. ASSY. (OPTION 10) 1061/1071 | DRAWING No: 480402 |
| ± 1mm ± 2mm ± 4mm | | | SHEET: 1 OF 1 |

DRAWING No 430402

FIRST USED ON 1061/1071

# THIRD ANGLE PROJECTION

DRAWN IN ACCORDANCE WITH BS 308




| DRAWN | CHECKED | DIMENSIONS IN |
|---|---|---|
| I.L. | R.J.W. | MILLIMETRES |
| TRACED | APPROVED | SCALE — |
| DATE 20.8.79 | DATE 3.9.79 | NOT TO BE SCALED |

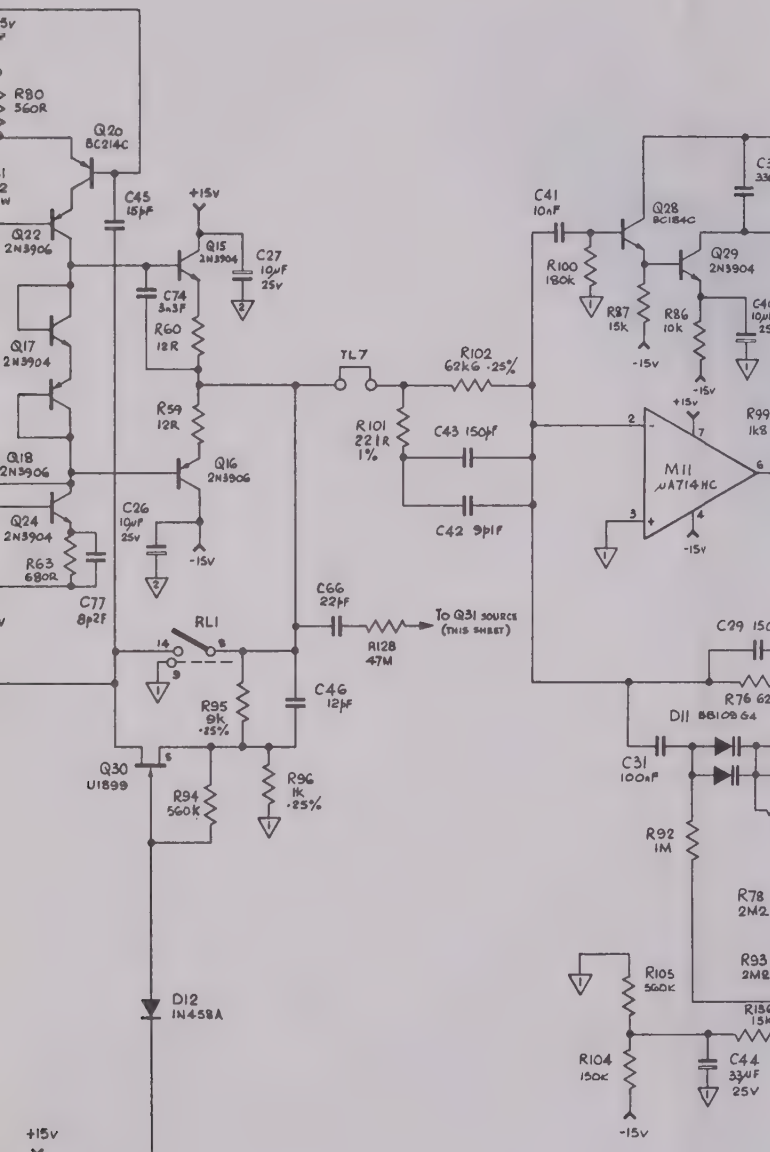
| TOLERANCES | ANGULAR ± |
|---|---|
| INCH DIMENSIONS | |
| DECIMAL TO 3 PLACES | ± .005 |
| DECIMAL TO 2 PLACES | ± .010 |
| FRACTIONAL | ± 1/64 |
| METRIC DIMENSIONS | |
| DECIMAL TO 2 PLACES | ± 1mm |
| DECIMAL TO 1 PLACE | ± 2mm |
| WHOLE DIMENSIONS | ± 4mm |
| UNLESS OTHERWISE STATED | |

JW 1161

5 6 7

ALL BURRS TO BE REMOVED

NOTES




| ISS. | CHANGES |
|---|---|
| 1 | RELEASED TO PRODN IL. 17.9.79 |
| 2 | ECO. 956. 957 R10 WAS 220k R11 WAS 18k R13 WAS 33k C6 WAS 680nF SEE ALSO SHEET 2 IL. 8.10.79 |
| 3 | ECO. 953. 956. R11 WAS 120K. R127 100M ADDED D13 WAS OA47 B.J. 24-10-79 |
| 4 | ECO 999 1007 R117 WAS 100R M4/11 & 12 LINKED C44 WAS 1µF C36 WAS 10pF C34 WAS 10pF C46 WAS 2pF C63 & C66 ADDED R81 WAS 100R R82 WAS 1K R128 ADDED SEE ALSO SHT. 2 IL. 1.11.79 |
| 5 | ECO.1011. 1016. 1036. C45 WAS 3p3F. C46 WAS 10nF. C34 WAS 22µF TANT. C63 REMOVED. C66 WAS 220pF. R128 WAS 15M. R81. R82 WERE 330R C36 WAS 100µF. D10 REMOVED. C67. R129 ADDED. R104 WAS 10k. R105 WAS 68k. C64 WAS 3p3F. IL. 2.1.80 |
| 6 | ECO.1058 C624 C69 ADDED IL. 23.1.80 |
| 7 | ECO 1069 SEE SHEET 2 IL. 15.2.80 |
| 8 | SEE SHEET 2 |
| 9 | ECO. 1112 1113 C71, R130, R133, R134 ADDED SEE ALSO SHEET 2 IL. 14.4.80 |
| 10 | ECO. 1133 D17 ADDED. IL. 13.6.80. |
| 11 | ECO. 1160 R135 & C72 ADDED |
| 12 | ECO. 1190 D11 WAS MUAM-2 C30 WAS 15pF IL. 5.1.80 |
| 13 | ECO. 1201. 1207 C34 & C72 DELETED R136 ADDED C39 WAS 100pF C44 WAS 10µF C45 WAS 10pF C46 WAS 8p2F R79 WAS 110k Q28 WAS 2N3904 IL. 8.4.81 |
| 14 | ECO. 1392 R130, C67, C71 DELETED C34, C74, D18 & D19 ADDED C45 WAS 12pF. C46 WAS 6p8F. D17 WAS CONNECTED TO Q33 PIN 6. (12 DT CATHODE END) IL. 8.9.82 |
| 15 | ECO. 1425 R118 WAS 82k D13 WAS IN4148 SEE ALSO SHT. 2. IL. 25.11.82 |
| 16 | ECO 1449 R127 & R135 DELETED R94 WAS 270K R104 - 16K R105 - 62K. BJ 15-2-83 |
| 22 | ECO 2164 C61 WAS 10pF C64 WAS 2p2F IL. 13.3.86 |
| 27.0 | ECO 1584 UPDATED TO ENG. PROC. 11 IL. 7.4.86 |
| 27.1 | ECO 2556. C61, 62 & 63. WERE 14006J, 14003G & 14008G JACKSON TRIMMERS. 15pF, 25pF, 25pF. RESP. BJ. 10 APR. 87. |
| 27.2 | ECO.2711 R101 WAS 294R IL. 3 DEC 87 |
| 17 | ECO. 1622. 1626 Q35 Q36 WERE D18/D19 RESP. (IN458A) D17 WAS FITTED FROM Q33 PIN 5 TO ▽ R79 WAS 120k R101 WAS 220R R136 WAS 27k IL. 2.5.84 |
| 18 | SEE SHEET 2. |
| 19 | ECO. 1730 C77 & Q37 ADDED. R63 WAS 2K2 R115 WAS 8K2 R129 WAS 2K2 IL. 23.10.84 |
| 20 | ECO 1657 R133/R134 WERE ½W MF BUT NOW ½W MG. M3/M4 WERE MC14076 M5 WAS MC14015 R122 WAS ¼W CARBON NOW ½W MG. IL. 22.5.85 |
| 21 | ECO 2015 R39 WAS 100K R41-R43, R9 DELETED R130-R132 C80-C82 & C84-C87 ADDED SEE ALSO SHT 2 IL. 8.10.85 |

MATERIAL —

FINISH —

datron ELECTRONICS LTD. NORWICH.

DRAWING SIZE A1

TITLE 1061/1071 AC - PREAMP

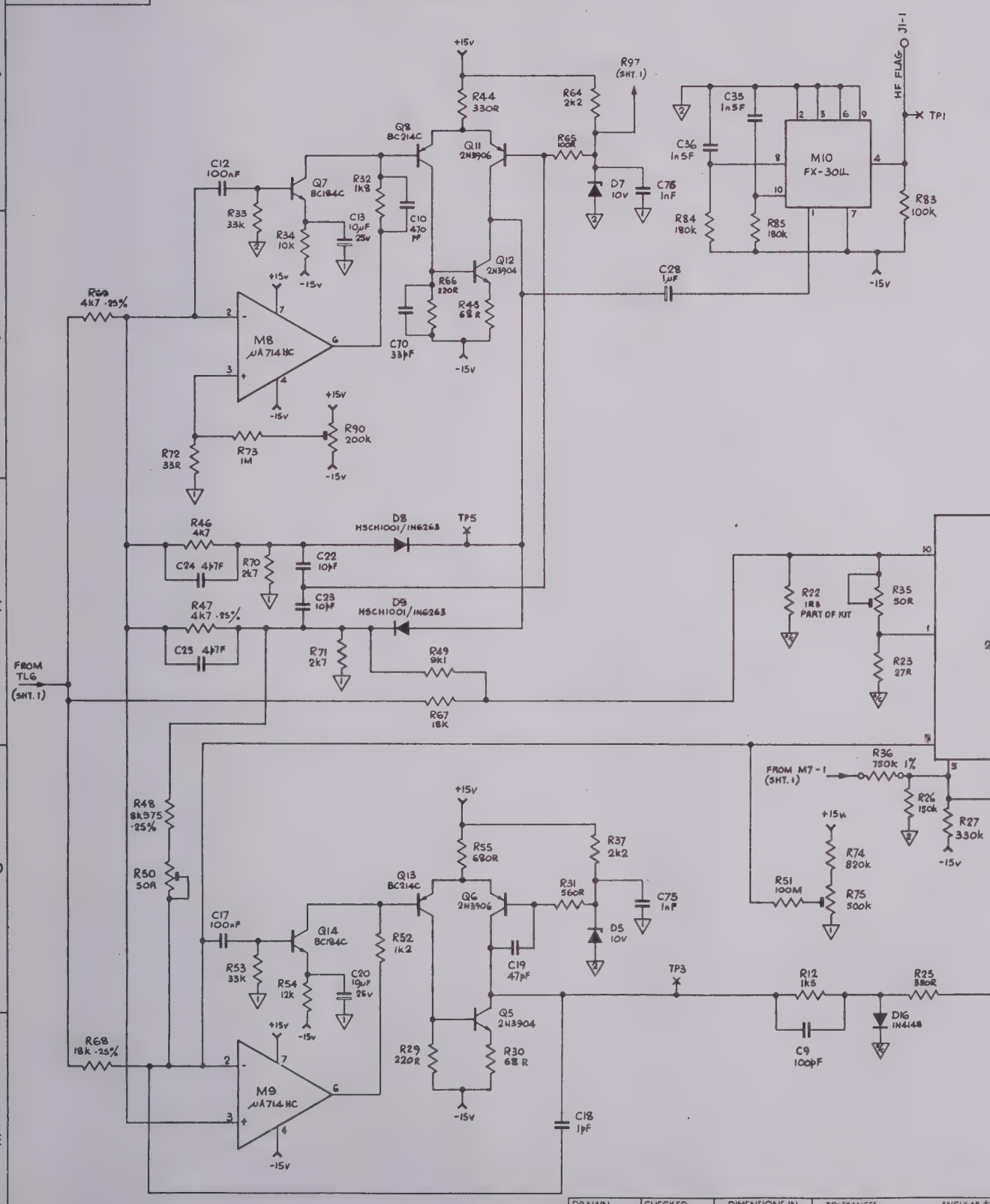
DRAWING No. 430402

SHEET 1 OF 2

DRAWING No. 430402.
FIRST USED ON

# THIRD ANGLE PROJECTION

DRAWN IN ACCORDANCE WITH BS 308




| DRAWN | CHECKED | DIMENSIONS IN | TOLERANCES | ANGULAR ±½° | MAT |
|---|---|---|---|---|---|
| IL | RJ 10 | MILLIMETRES | INCH DIMENSIONS<br>DECIMAL TO 3 PLACES ± .005<br>DECIMAL TO 2 PLACES ± .010<br>FRACTIONAL ± 1/64 | | |
| TRACED | APPROVED | SCALE —— | METRIC DIMENSIONS<br>DECIMAL TO 2 PLACES ± 1mm<br>DECIMAL TO 1 PLACE ± 2mm<br>WHOLE DIMENSIONS ± 4mm | | FINIS |
| DATE 20.8.79 | DATE 3.9.79 | NOT TO BE SCALED | UNLESS OTHERWISE STATED | | |

JW 1141

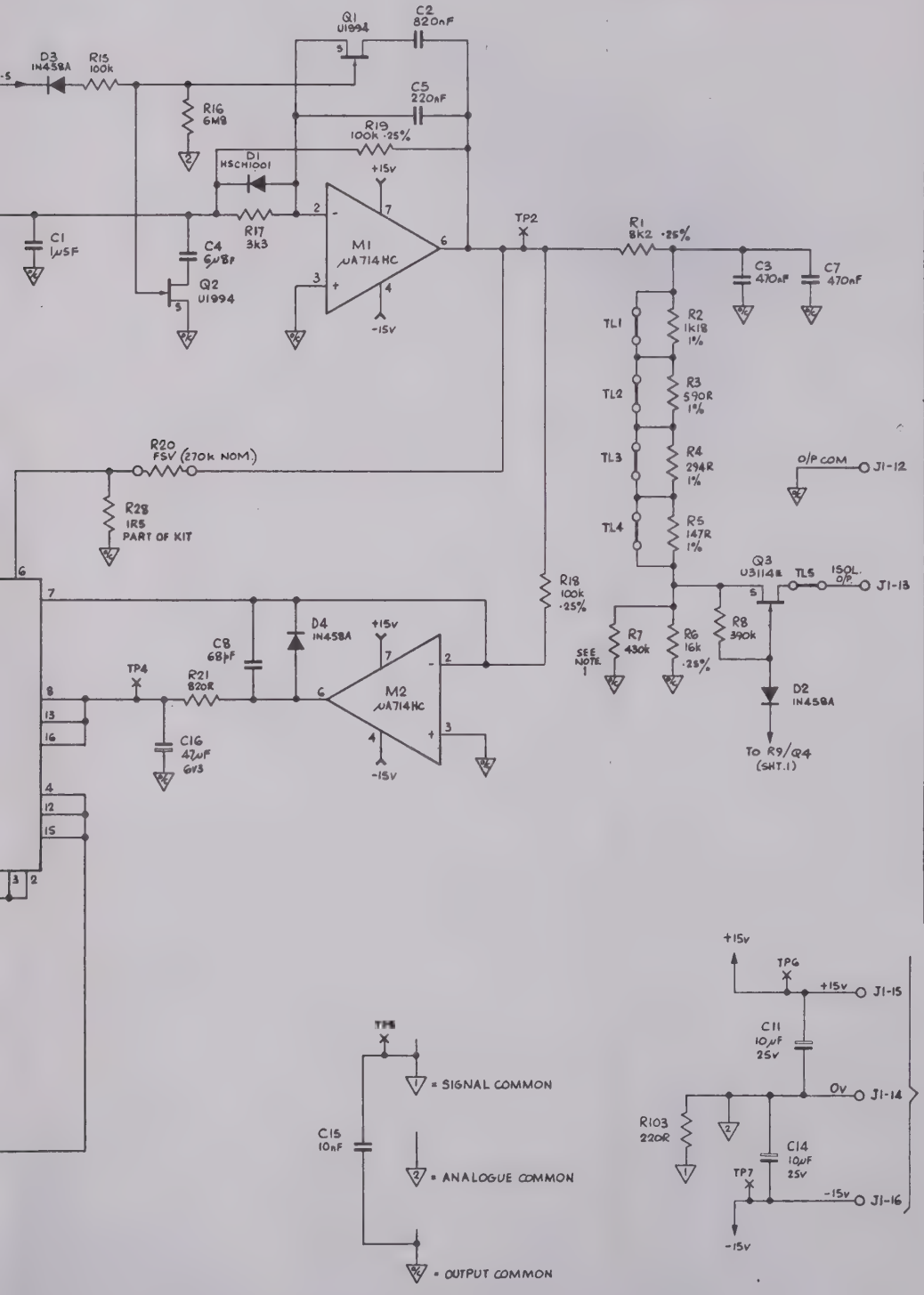
5 | 6 | 7

ALL BURRS TO BE REMOVED

## NOTES

1. RESISTOR R7 IS NOT FITTED ON A.C. ASSEMBLIES USED IN 1061's INSTRUMENTS.

| ISS. | CHANGES |
|---|---|
| 1 | RELEASED TO PRODN IL 17.9.79 |
| 2 | ECO 956 C2 WAS 680nF IL 8.10.79 24-10-79 |
| 3 | SEE SHT 1. B.J. |
| 4 | R83 WAS 10k R74 WAS 1M5 D16 ADDED IL 1.11.79 |
| 5 | ECO. 1011. 1016, 1036 R26 WAS 180k R7 WAS 1M. IL 2.1.80 |
| 6 | SEE SHEET 1 |
| 7 | ECO. 1069 R70 WAS 680R R71 WAS 680R C70 ADDED IL 14 2 80 |
| 8 | ECO. 1082 R27 WAS 680k R36 WAS 820k R74 WAS 1M IL 27 2 80 |
| 9 | ECO. 1112 R50 WAS 100R IL 14.4.80 |
| 10 | SEE SHEET 1 |
| 11 | SEE SHEET 1 |
| 12 | SEE SHEET 1 |
| 13 | SEE SHEET 1 |
| 14 | SEE SHEET 1 |
| 15 | ECO. 1425 R36 WAS 1M2 C75 + C76 ADDED SEE ALSO SHT. 1 IL 25.11.82 |
| 16 | SEE SHEET 1 |
| 17 | SEE SHEET 1 |
| 18 | ECO 1648 R36 WAS 750K B.J. 11th JUNE 84. |
| 19 | SEE SHEET 1 |
| 20 | SEE SHEET 1 |
| 21 | ECO 2015 R36 NOW FSV SEE ALSO SHT. 1 IL 8.10.85 |
| 22 | SEE SHEET 1 |
| 27.0 | ECO1984 UPDATED TO ENG. PROC. 11 IL 7.4.86 |
| 27.1 | ECO. 2711 R36 WAS 909k NOM IL FSV 3 DEC 87 |




datron ELECTRONICS LTD. NORWICH.

DRAWING SIZE A1

TITLE 1061/1071 A.C. RMS SECTION.

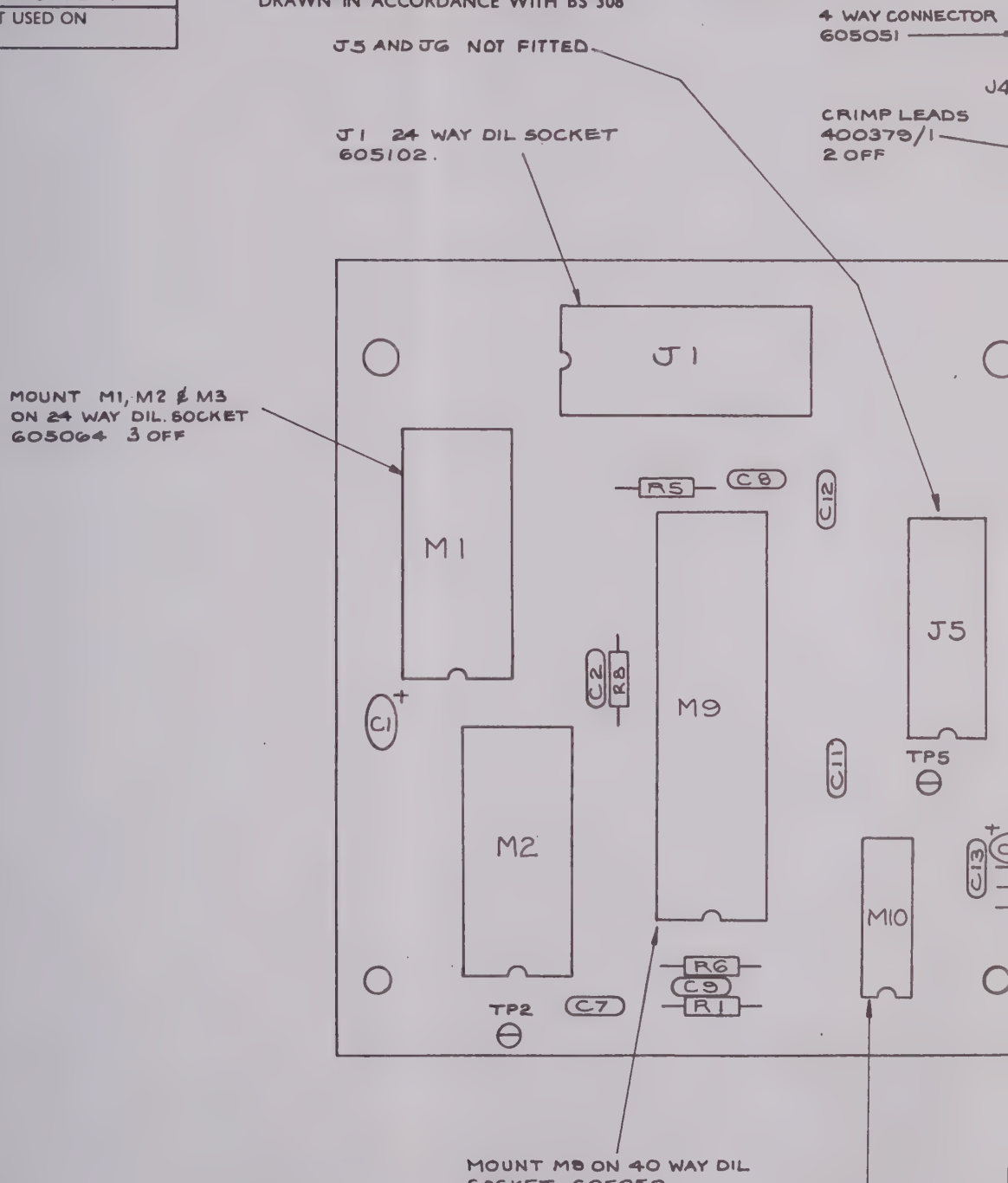
DRAWING No. 430402

SHEET 2 OF 2

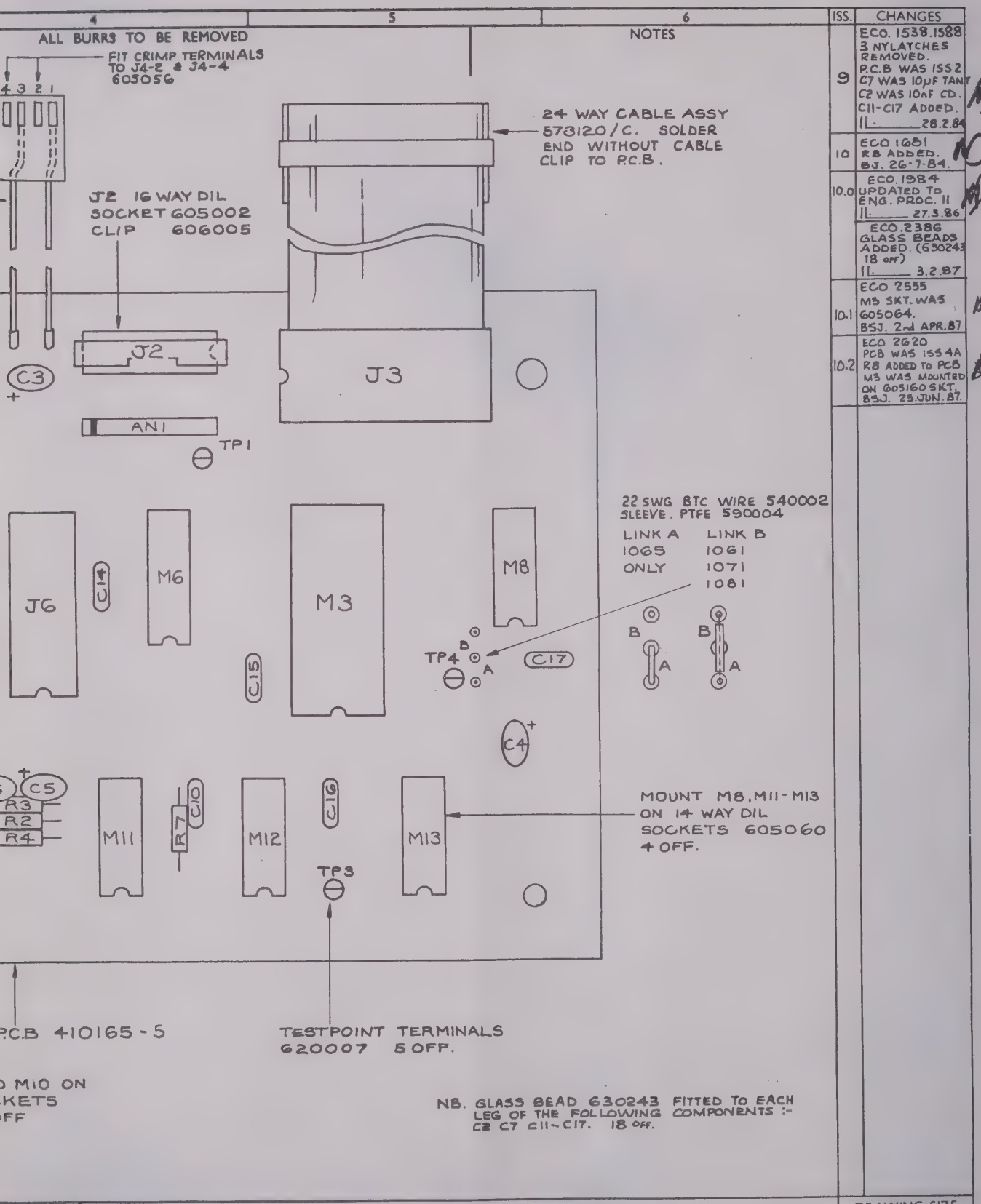
DRAWING No.
480427
FIRST USED ON

# THIRD ANGLE PROJECTION

DRAWN IN ACCORDANCE WITH BS 308




| | | | | |
|---|---|---|---|---|
| DRAWN JR | DATE 5·10·83 | DIMENSIONS IN MILLIMETRES | METRIC DIMENSIONS<br>ANGULAR ± ½°<br>DECIMAL TO 2 PLACES ± ·1mm<br>DECIMAL TO 1 PLACE ± ·2mm<br>WHOLE DIMENSIONS ± ·4mm<br>UNLESS OTHERWISE STATED | MATERIAL —— |
| CHKD MSD | DATE 5.10.83 | SCALE 2:1 NOT TO BE SCALED | | FINISH —— |
| APPD. | DATE | | | |




NOTES

| ISS. | CHANGES |
|---|---|
| 9 | ECO. 1538.1588 3 NYLATCHES REMOVED. P.C.B WAS ISS 2 C7 WAS 10μF TANT C2 WAS 10nF CD. C11-C17 ADDED. JL. 28.2.84 |
| 10 | ECO 1681 R8 ADDED. BJ. 26-7-84. |
| 10.0 | ECO. 1984 UPDATED TO ENG. PROC. II JL. 27.3.86 |
| | ECO.2386 GLASS BEADS ADDED. (630243 18 OFF) JL. 3.2.87 |
| 10.1 | ECO 2555 M3 SKT. WAS 605064. BSJ. 2nd APR.87 |
| 10.2 | ECO 2620 PCB WAS ISS 4A R8 ADDED TO PCB M3 WAS MOUNTED ON 605160 SKT. BSJ. 25.JUN.87. |

datron ELECTRONICS LTD. NORWICH.

DRAWING SIZE A2

TITLE IEEE P.C.B ASSY 1065 1061 1071 1081

DRAWING No. 480427

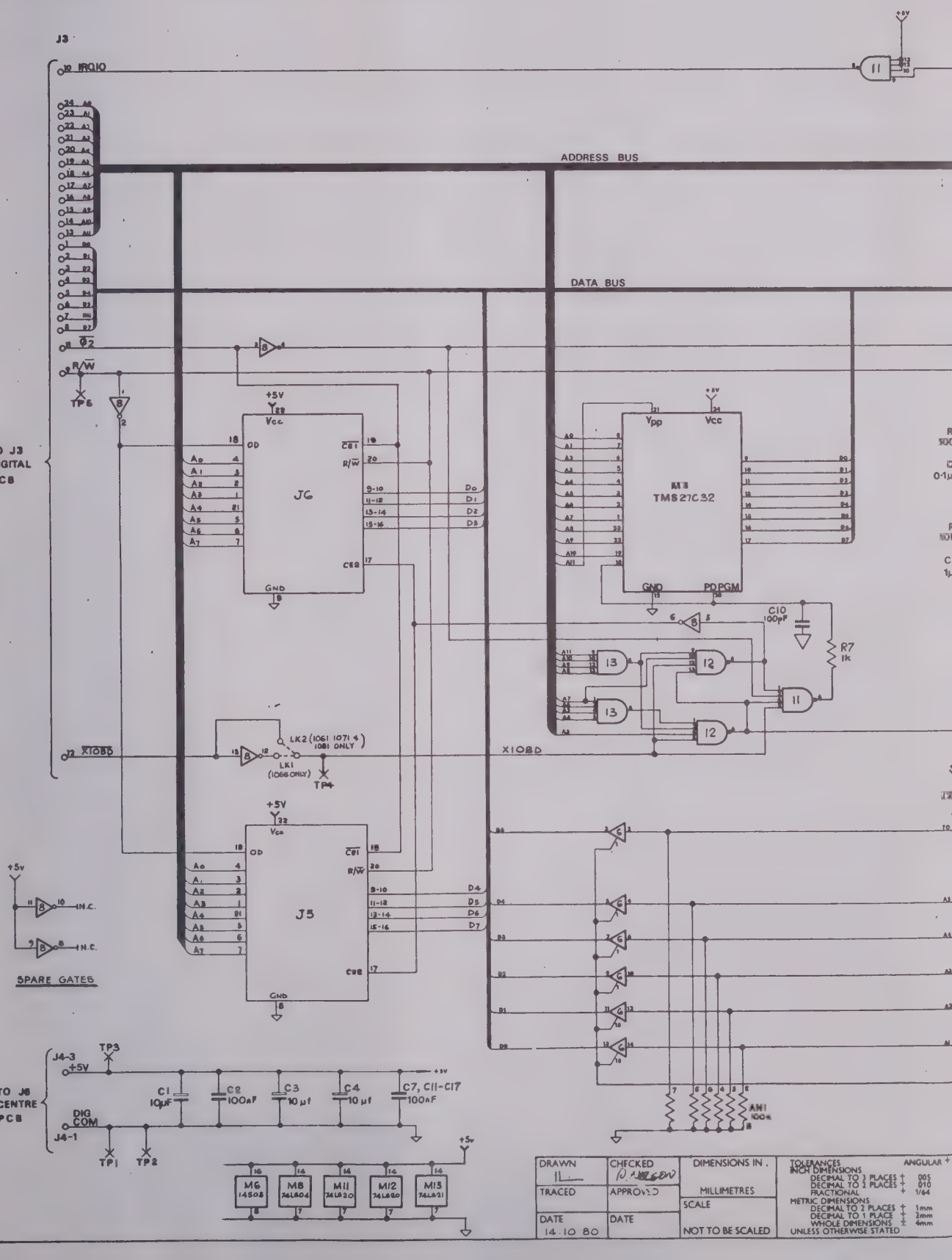
SHEET 1 OF 1

J.W. 2042

| DRAWING No. | 430427 |
|---|---|
| FIRST USED ON | 1065 |

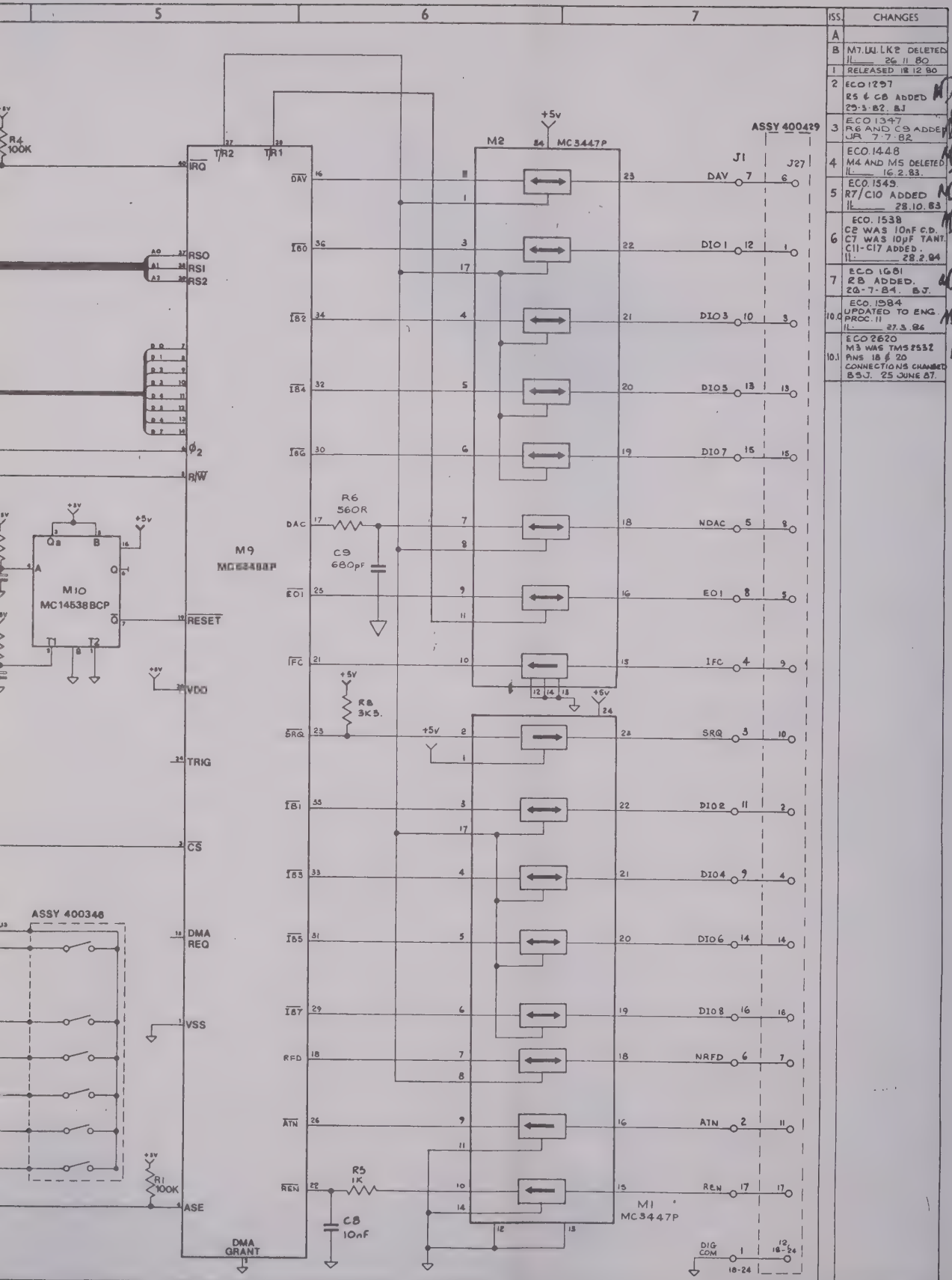
# THIRD ANGLE PROJECTION

DRAWN IN ACCORDANCE WITH BS 308




| DRAWN | CHECKED | DIMENSIONS IN | TOLERANCES | ANGULAR ± |
|---|---|---|---|---|
| IL | D.A.BROWN | MILLIMETRES | INCH DIMENSIONS | |
| TRACED | APPROVED | SCALE | DECIMAL TO 3 PLACES ± | .005 |
| DATE 14.10.80 | DATE | NOT TO BE SCALED | DECIMAL TO 2 PLACES ± | .010 |
| | | | FRACTIONAL ± | 1/64 |
| | | | METRIC DIMENSIONS | |
| | | | DECIMAL TO 2 PLACES ± | 1mm |
| | | | DECIMAL TO 1 PLACE ± | 2mm |
| | | | WHOLE DIMENSIONS ± | 4mm |
| | | | UNLESS OTHERWISE STATED | |

JW 116




| ISS. | CHANGES |
|---|---|
| A | |
| B | M7.LK1.LK2 DELETED IL 26.11.80 |
| 1 | RELEASED 18.12.80 |
| 2 | ECO 1297 R5 & C8 ADDED 29.3.82. BJ |
| 3 | ECO 1347 R6 AND C9 ADDED JR 7.7.82 |
| 4 | ECO 1448 M4 AND M5 DELETED IL 16.2.83. |
| 5 | ECO 1549. R7/C10 ADDED IL 28.10.83 |
| 6 | ECO. 1538 C8 WAS 10nF C.D. C7 WAS 10µF TANT. C11-C17 ADDED. IL 28.2.84 |
| 7 | ECO 1681 R8 ADDED. 20-7-84. BJ. |
| 10.0 | ECO 1984 UPDATED TO ENG. PROC. 11 IL 27.3.86 |
| 10.1 | ECO 2620 M3 WAS TMS2532 PINS 18 & 20 CONNECTIONS CHANGED BSJ. 25 JUNE 87. |

| | | | |
|---|---|---|---|
| MATERIAL | datron ELECTRONICS LTD. NORWICH. | DRAWING SIZE | A1 |
| FINISH | TITLE: IEEE 488 OPTION CIRCUIT DIAGRAM 1065. 1061 1071. 1081 | DRAWING No: 430427 | SHEET: 1 OF 1 |

DRAWING No.
400552

| | MOUNTING ICs | | |
|---|---|---|---|
| No OF WAYS | PART No | No OFF | USED TO MOUNT |
| 8 | 605059 | 4 | M2 M8 M13 M16 |
| 14 | 605060 | 1 | M7 |
| 16 | 605061 | 5 | M3, 6, 12 13 17 |

GUARD SHIELD 450288 TO BE SECURED WITH M3 × 6mm POZI-DR SCREWS 611007 3mm, TO M3 HEX. STAND OFFS.

TEST POINT TERMINAL G20007 12 off

TEST LINKS M... BTC WIRE 54...

PCB 410217-4

FSV TERMINAL 602001 2off

MOUNT M11 ON 'BREAKAWAY' TERMINAL STRIP 602004. 16way

16 WAY RIBBON CABLE ASSY 571085/C 1 off

NYLATCH GROMMET G17011 3off

NYLATCH PLUNGER G17010 5off NB FIT FROM COMPONENT SIDE OF P.C.B.

SECTION A-A

CERAMIC BEAD G30024 2off (MOUNT D23)

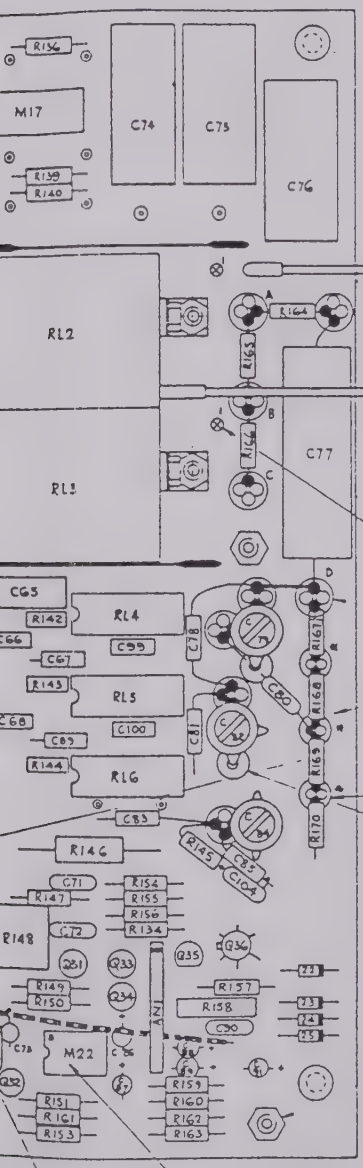
DOT DENOTES OUTER FOIL (RED) END OF POLYSTYRENE CAPACITORS i.e. C92, C41, C43, C46, C57, C70

| | |
|---|---|
| DRAWN | DATE 4.4.84 |
| CHECKED L.O.G. | DATE 10-4-8... |
| APPD | DATE 13-9-8... |

| ISS. | CHANGES |
|---|---|
| 1 | RELEASED 13.9.84 |
| 2 | ECO 1700 & 1702 R145 & C104 ADDED PCB No 5135.3 AP 14.9.84 |
| 3 | ECO 1884 C54 WAS 1nF CER 5% 24 1 85 |

ATIVE DEVICE FOR

OM 22 SWG A/R




SLEEVE ALL SOLDERED JOINTS WITH HALF PIECE OF 590001

'A'

CRIMP TERMINAL (FOR BLANKING ONLY) 605057

WIRE TERMINAL ASST 400379/5

8 WAY POLARISED SOCKET 605052

WIRE 120mm PTFE INSULATED 7/0·2 WHITE 540008 PLUS COLD CRIMP TERMINAL 605057 FITTED AS SHOWN.

SOLDER TERMINAL 620003 2 off.

CLOVERLEAF TERMINAL 620005. 9 off

SLEEVE LEADS OF C80 BEFORE SOLDERING LEADS INTO CLOVERLEAF - 590004 POSITION CAP AND LEADS AWAY FROM CLOVERLEAFS.

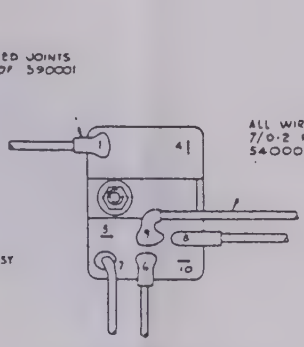
BRASS STRIP 220mm LONG 630107 N.B. STRIP SHOULD BE SOLDERED AS CLOSE AS POSSIBLE TO LEFT HAND SIDE OF COPPER 'LAND' AS SHOWN

SMALL CLOVERLEAF TERMINAL 620001 5 off

PTFE BUSH 620008 2 off

CROP PIN 8 FROM M22 BEFORE FITTING INTO PCB

LINK MADE FROM 7/0·2 PTFE INSULATED WHITE WIRE 540008 X 70mm FIT TO UNDERSIDE OF PCB.




VIEW SHOWING RELAY PIN Nos

| RELAY WIRING | | |
|---|---|---|
| FROM | TO | LENGTH (mm) |
| RL2 PIN 1 | SOLDER PIN 1 | 25 |
| RL2 PIN 6 | RL2 PIN 9 | WIRE, SOLDERED JOIN - 540002 |
| RL2 PIN 7 | J3 PIN 1 | 120 |
| RL2 PIN 10 | RL3 PIN 3 | 40 |
| RL3 PIN 1 | SOLDER PIN 2 | 25 |
| RL3 PIN 7 | C/LEAF B | 45 |
| RL3 PIN 6 | C/LEAF D | 40 |
| RL3 PIN 10 | C/LEAF C | 25 |
| RL3 PIN 8 | C/LEAF A | 35 |

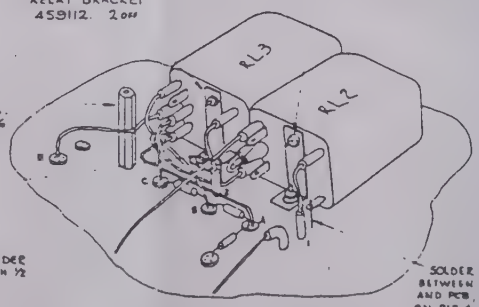
RELAY BRACKET 459112. 2 off

3-48 UNC NUT 615005 2 off
M2·5 WASHER 613014 2 off

M3 x 16mm SPACER 612021 SECURE FROM UNDERSIDE OF PCB. M3 x 8mm POZI-PAN SCREW 611016 M3 CRINKLE WASHER 613025. 3 off EACH

M3 x 8 P/PAN SCREW 611016 2 off
M3 NUT 615002 2 off
M3 SHAKEPROOF 2 off

SOLDER WIRE ENDS TO SOLDER TERMINALS & SLEEVE WITH ½ PIECE OF 590001




SOLDER WIRE LINES BETWEEN RELAY TERM^S AND PCB, AS SHOWN ON RLE & RLS 540002

VIEW IN DIRECTION OF ARROW 'A'
SHOWING RELAY WIRING

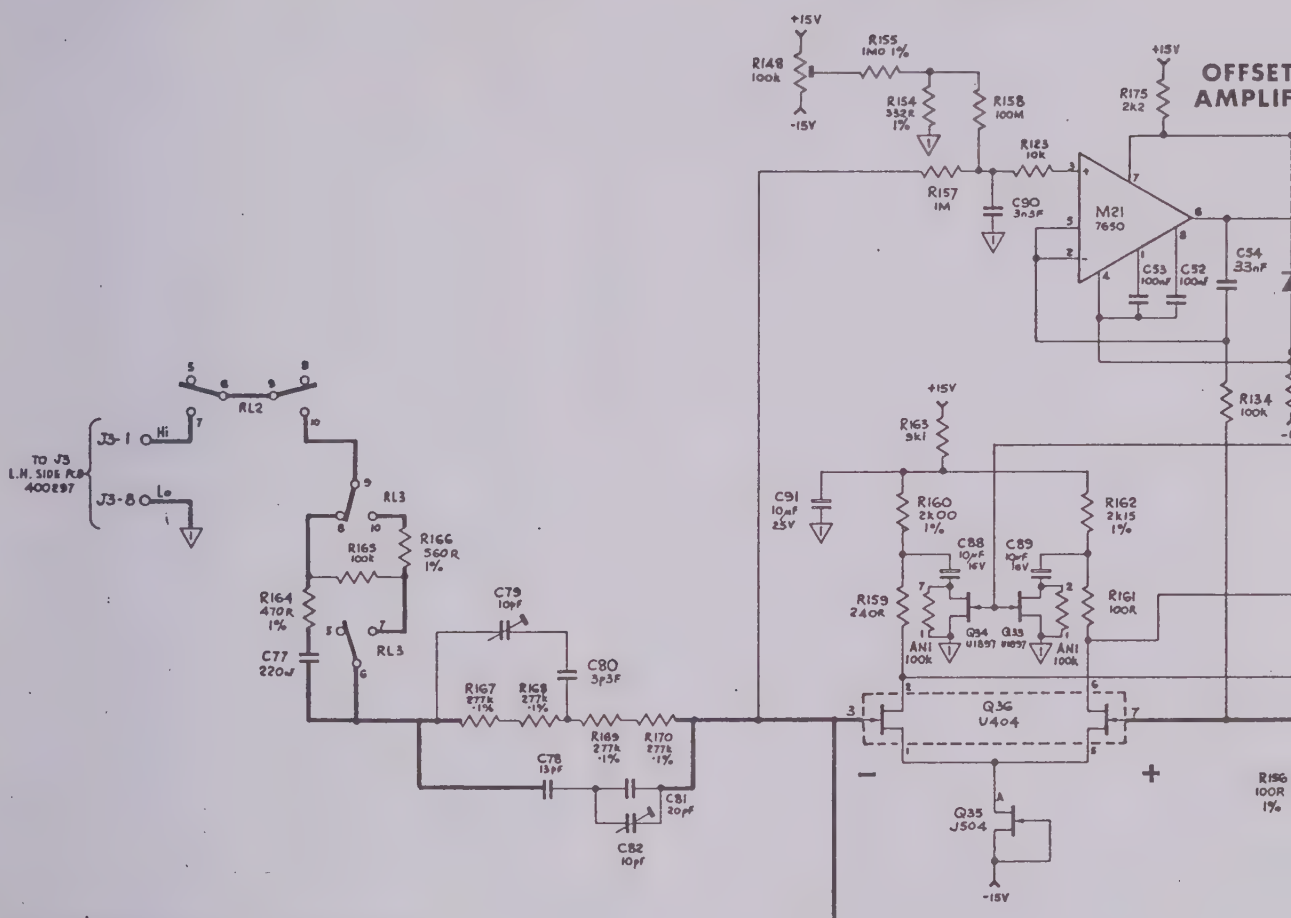
N.B. C77 REMOVED FROM VIEW, FOR CLARITY

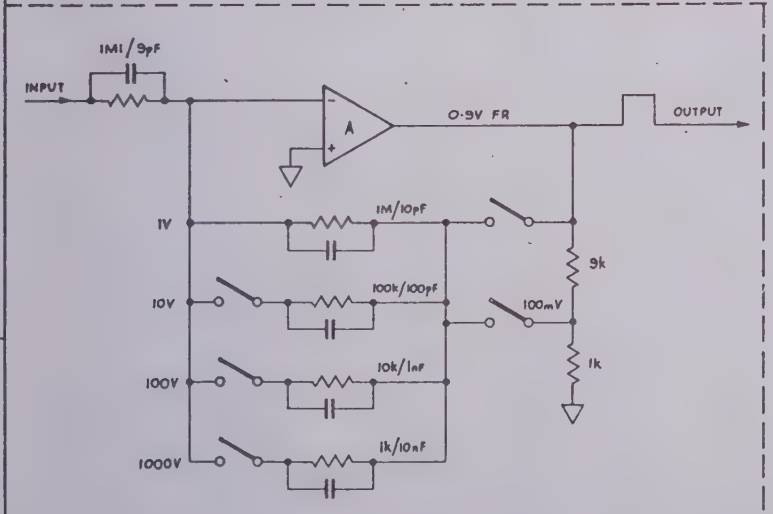
datron
ELECTRONICS LIMITED
NORWICH

| | | | | | |
|---|---|---|---|---|---|
| DIMENSIONS IN MILLIMETRES | TOLERANCES: DECIMAL TO 2 PLACES ± 1mm; DECIMAL TO 1 PLACE ± 2mm; WHOLE DIMENSIONS ± 6mm; ANGULAR ± 1° | MATERIAL | ASSY DRG & PARTS LIST 400552 | TITLE: 1061A/62.AC PCB ASSY (OP.12) | DRAWING No. 400552 |
| SCALE 2:1 | UNLESS OTHERWISE STATED | FINISH | CIRCUIT DIAGRAM 430552 | | |
| DO NOT SCALE | FIRST ANGLE PROJECTION | | CHECK PROCEDURE 460552 | | SHEET 1 OF 20 |
| | | | CHECK LIST 470552 | | |

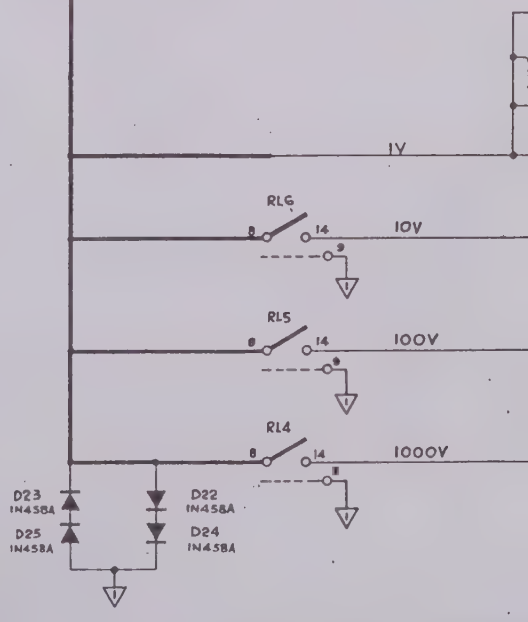
DRAWING No.
430552

## BIAS CURRENT




SIMPLIFIED SCHEMATIC




| | | |
|---|---|---|
| DRAWN IL | DATE 7.7.83. | DIMENSIONS IN MILLIMETRES |
| CHECKED L.O.G. | DATE 11-7-83 | SCALE —— |
| APP. [illegible] | DATE 15.9.84 | NOT TO BE SCALED |

| ISS. | CHANGES |
|---|---|
| A | 7.7.83 |
| B | 29.3.84 |
| 1 | RELEASED 13.9.84 |
| 2 | ECO.1702 C104 & R145 ADDED A/P. 14.9.84 |
| 3 | ECO.1824 C54 WAS INF CER DISC. IL. 24.1.86 |

# NULL ER

## AC PRE-AMP

C64 10µF
R155 10k
C63 10nF
D20 8V2
C93 10µF
R176 2k2
R153 100k
TO Q11 SHT. 4.
R149 18k2 1%
Q31 U1897
+15V
R150 10R
C86 10µF 25V
M22 HA2627
TLK.
To R131, R133 SHT. 2
C87 10µF
R151 10R
-15V
A1 100k
C72 100nF
C73 22pF 16V
R147 100R
C71 33pF
A1 100k
To D27 SHT. 4
Q32 U1897
C84 0pF
C104 0.5pF
C83 15pF
C85 20pF
R146 1M 0.1%
R144 111k 1%
C69 91pF
C68 6n8F
R143 10k1 1%
C67 1nF
C66 100nF
R142 1k 1%
C65 10nF
RL1
14
8
9
R122 9k 1%
C47 2p7F
Q23 U1899
100mV
5
R120 270k
R121 1k 1%
D15 IN4584
To M12 PIN 14 SHT. 4

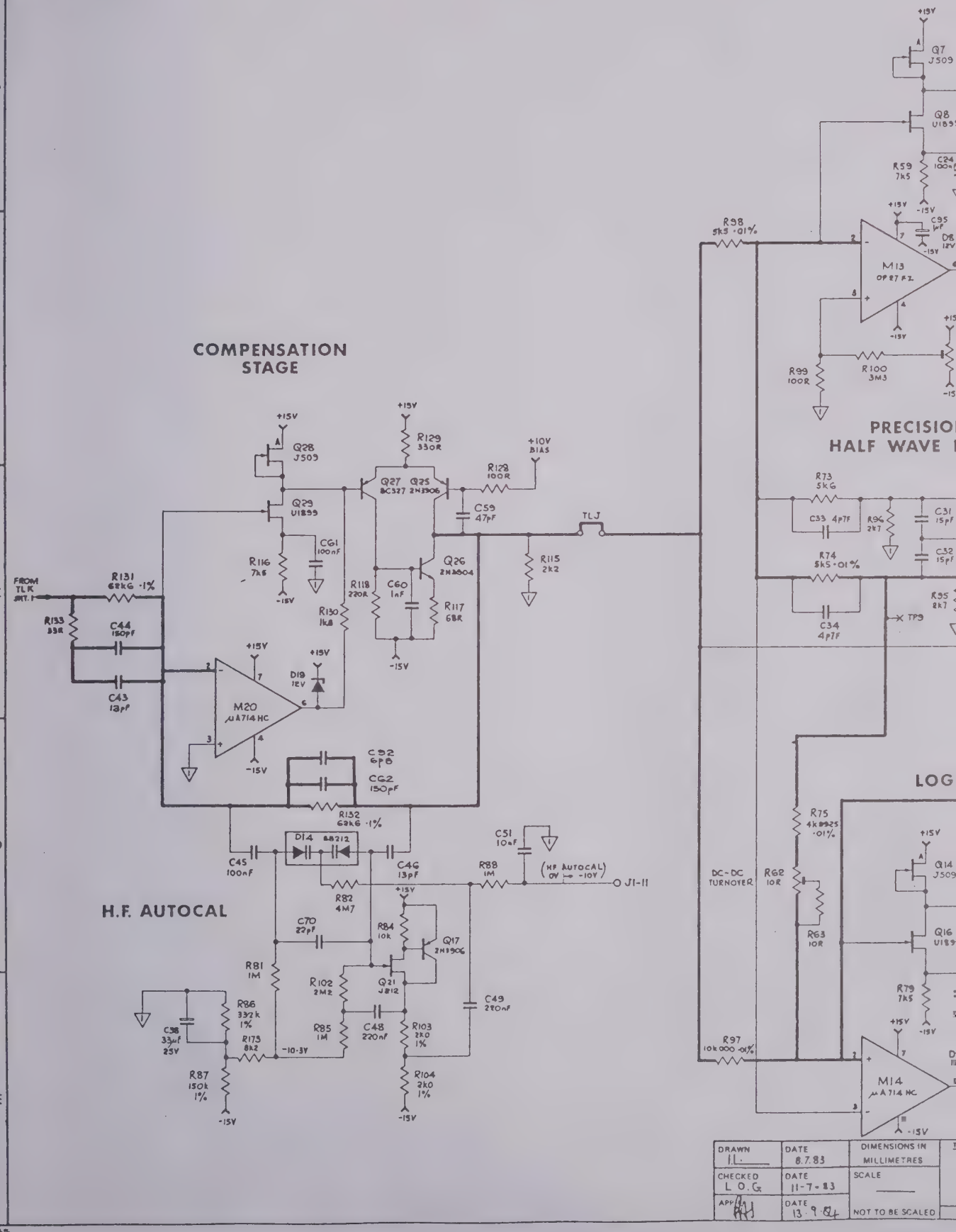
NOTE : 1. INCREASE C71 TO REDUCE READING AT 1MHz ON 1V AND 10V RANGES.

2. INCREASE C47 TO REDUCE READING AT 1MHz ON 100mV RANGE.

datron ELECTRONICS LIMITED NORWICH

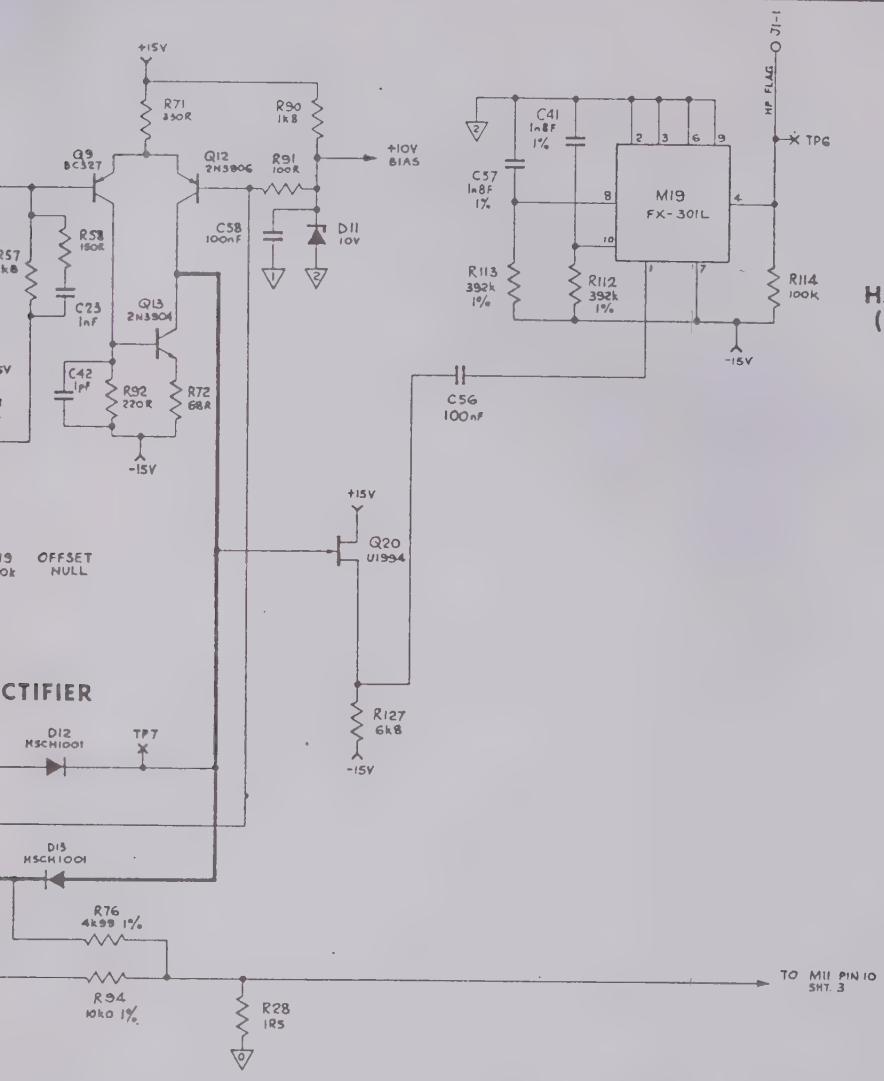
| | | | | | |
|---|---|---|---|---|---|
| TOLERANCES: DECIMAL TO 2 PLACES ± .1mm; DECIMAL TO 1 PLACE ± .2mm; WHOLE DIMENSIONS ± .4mm; ANGULAR ± ½° UNLESS OTHERWISE STATED. FIRST ANGLE PROJECTION | MATERIAL —— FINISH —— | ASSY DRG & PARTS LIST 400552; CIRCUIT DIAGRAM; CHECK PROCEDURE 460552; CHECK LIST 470552 | TITLE: 1061/62 AC PRE-AMP (OPTION 12) | DRAWING No. 430552 | SHEET 1 OF 4 |

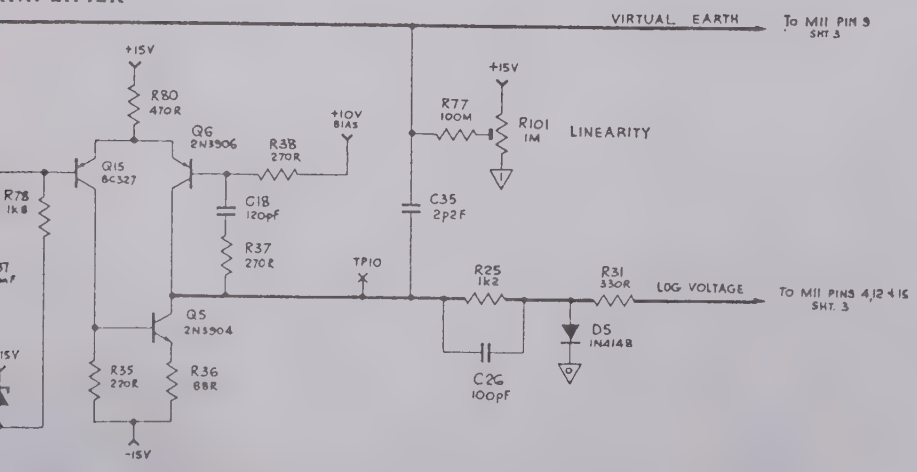
DRAWING No.
430552




| | | | |
|---|---|---|---|
| DRAWN I.L. | DATE 6.7.83 | DIMENSIONS IN MILLIMETRES | |
| CHECKED L.O.G. | DATE 11-7-83 | SCALE —— | |
| APP'D [illegible] | DATE 13.9.84 | NOT TO BE SCALED | |

| ISS | CHANGES |
|---|---|
| A | 7.7.83 |
| B | 29 3 84 |
| 1 | RELEASED 13.9.84 |
| 2 | SEE SHT 1 |
| 3 | SEE SHT. 1 |

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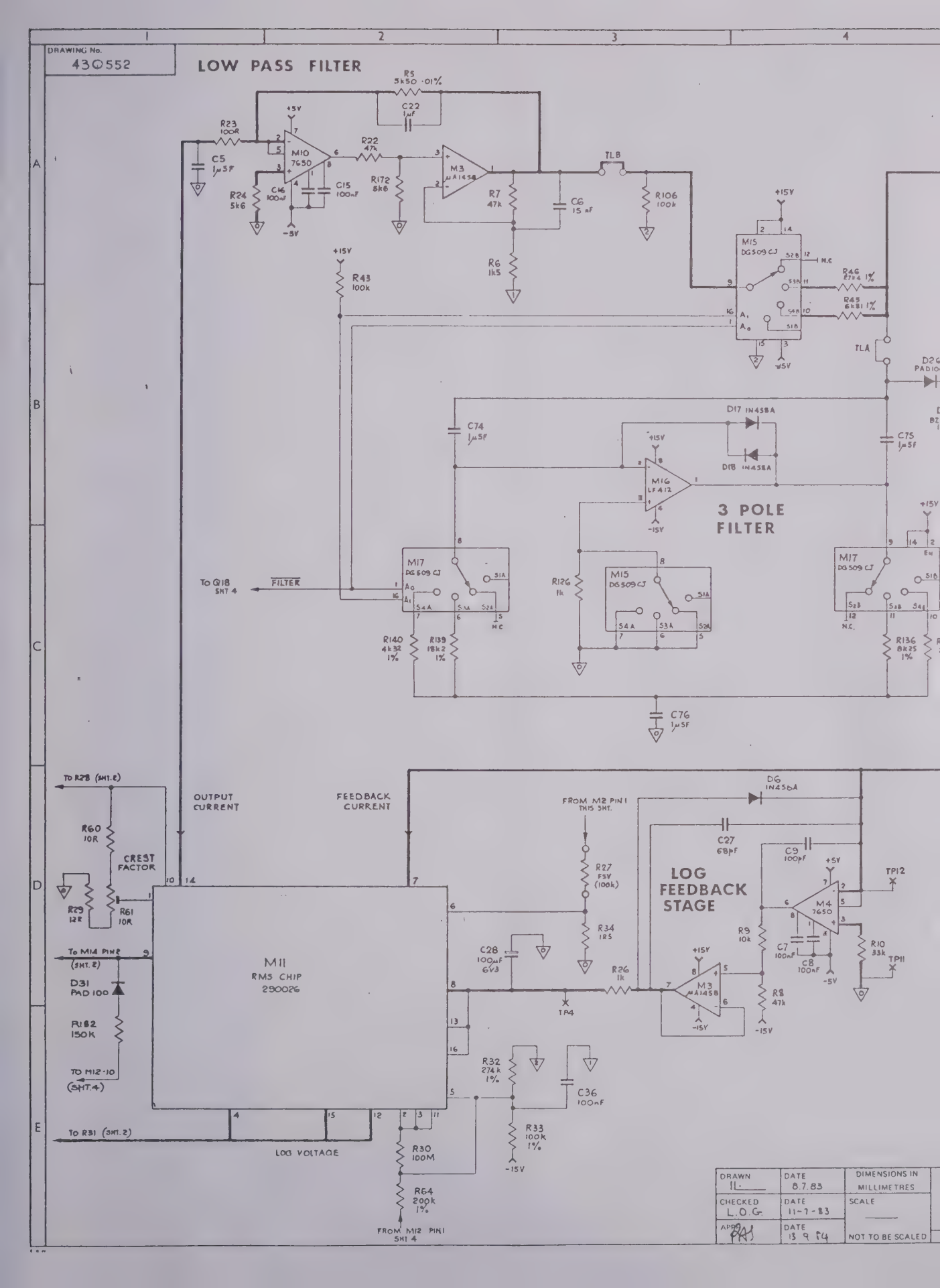
| | | | | |
|---|---|---|---|---|
| ANCES<br>ECIMAL TO 2 PLACES ± 1mm<br>ECIMAL TO 1 PLACE ± 2mm<br>HOLE DIMENSIONS ± 4mm<br>NGULAR ± 60<br>NLESS OTHERWISE STATED<br>T ANGLE PROJECTION | MATERIAL<br>FINISH | ASSY DRG & PARTS LIST 400552<br>CIRCUIT DIAGRAM<br>CHECK PROCEDURE 460552<br>CHECK LIST 470552 | TITLE<br>1061/62 A.C.<br>(OPTION 12) | DRAWING No.<br>430552<br>SHEET 2 OF 4 |

DRAWING No.
430552

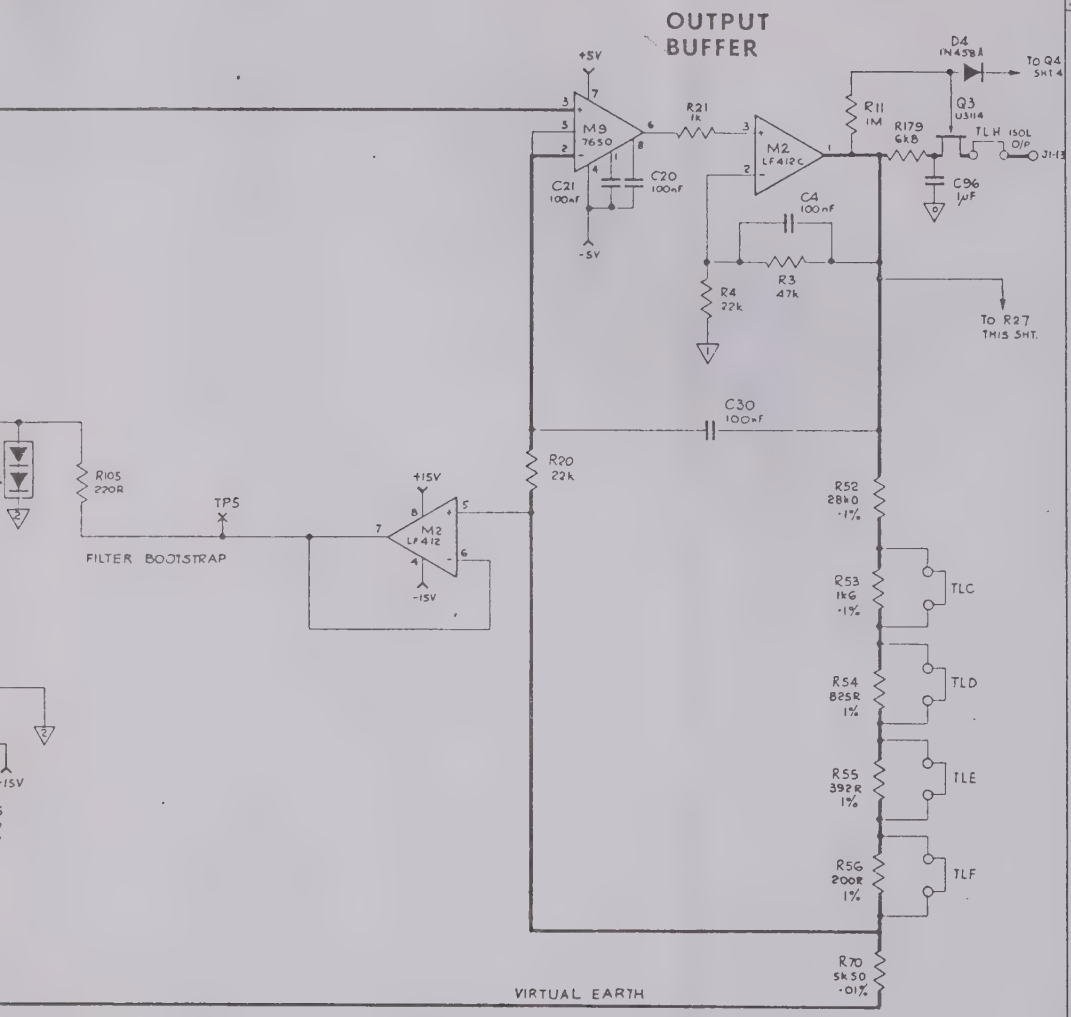
# LOW PASS FILTER

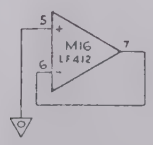



| | | | |
|---|---|---|---|
| DRAWN IL | DATE 8.7.83 | DIMENSIONS IN MILLIMETRES | |
| CHECKED L.O.G. | DATE 11-7-83 | SCALE | |
| APPD PAJ | DATE 13 9 84 | NOT TO BE SCALED | |

| 5 | 6 | 7 |
|---|---|---|

| | CHANGES |
|---|---|
| A | 7 7 83 |
| B | 29 3 84 |
| 1 | RELEASED 13/9/84 |
| 2 | SEE SHT 1 |
| 3 | SEE SHT. 1 |

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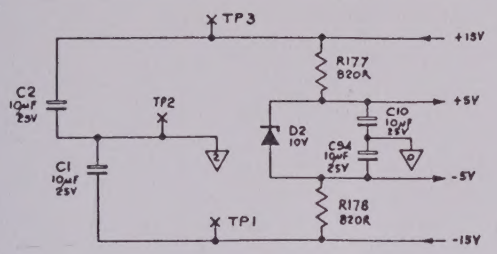
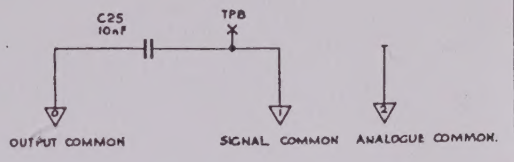
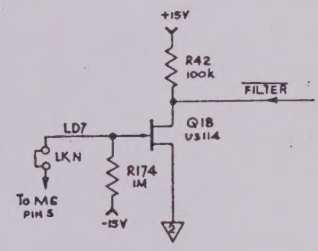
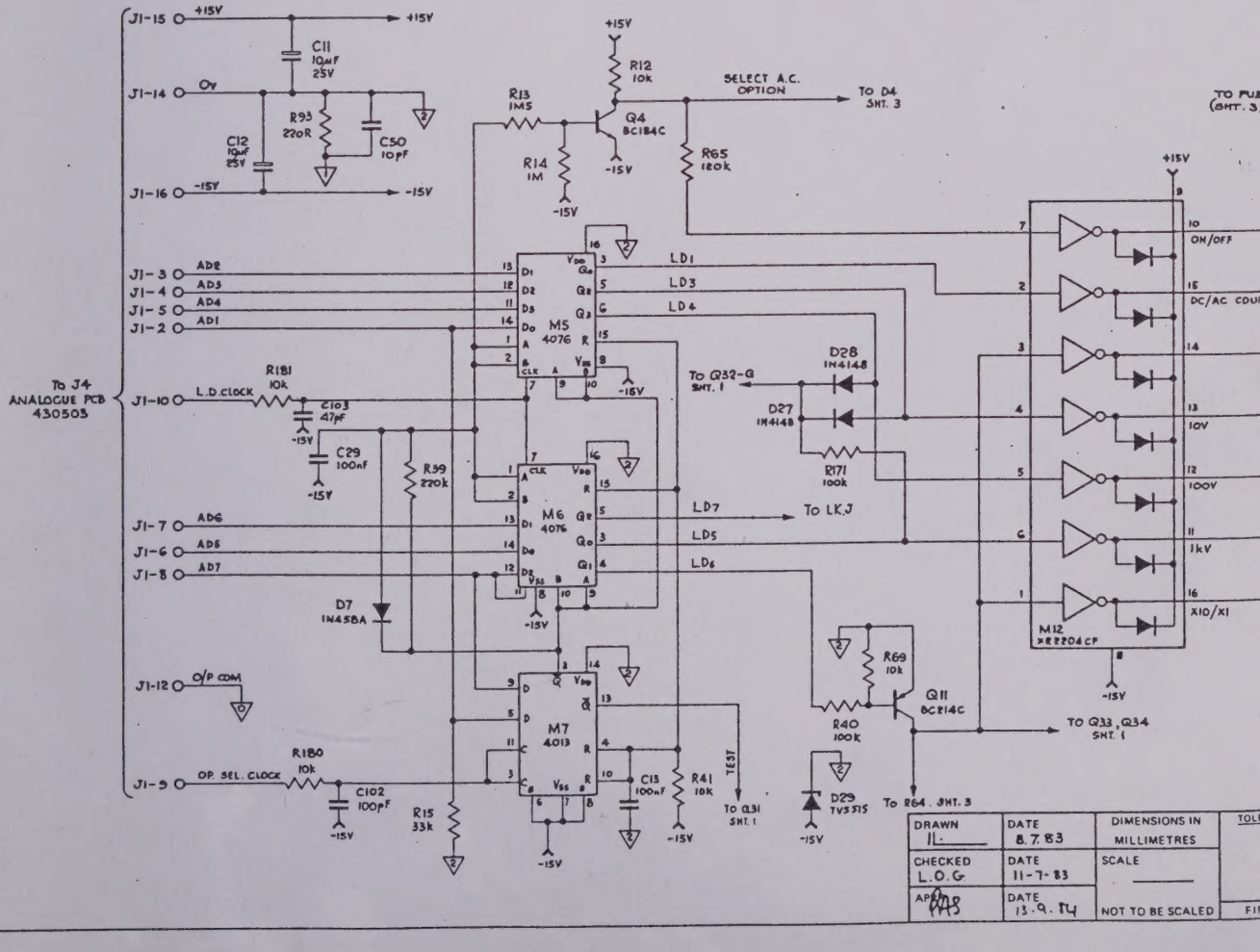
| TOLERANCES | MATERIAL | ASSY DRG No / | 400552 | TITLE | DRAWING No |
|---|---|---|---|---|---|
| DECIMAL TO 2 PLACES : 1mm | | PARTS LIST 1 | | 1061/62 AC RMS CONVERTER. (OPTION 12) | 430552 |
| DECIMAL TO 1 PLACE : 2mm | | CIRCUIT DIAGRAM | | | |
| WHOLE DIMENSIONS : 4mm | | CHECK PROCEDURE | 460552 | | |
| ANGULAR ± x° | FINISH | CHECK LIST | 470552 | | SHEET 3 OF 4 |
| UNLESS OTHERWISE STATED | | | | | |
| 1ST ANGLE PROJECTION | | | | | |

DRAWING No.
430552



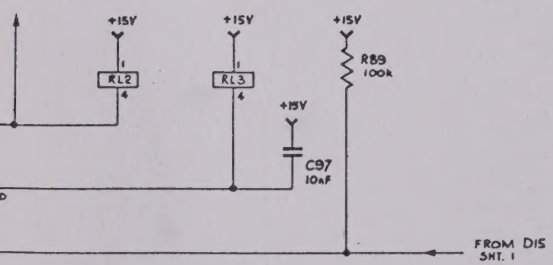



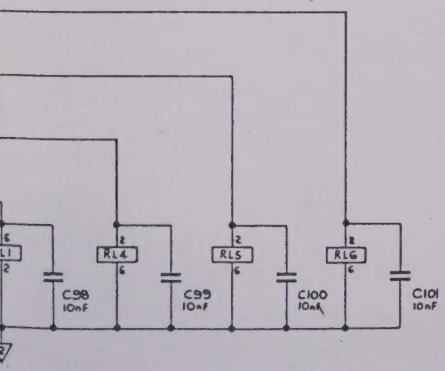

| | | | |
|---|---|---|---|
| DRAWN JL | DATE 8.7.83 | DIMENSIONS IN MILLIMETRES | TOL |
| CHECKED L.O.G | DATE 11-7-83 | SCALE — | |
| APP | DATE 13.9.84 | NOT TO BE SCALED | FI |

| 5 | 6 | 7 |
|---|---|---|

| ISS. | CHANGES |
|---|---|
| A | 7.7.83 |
| B | 23 3 84 |
| 1 | RELEASED 13.9.94 |
| 2 | SEE SHT 1 |
| 3 | SEE SHT. 1 |

M17 PIN 1
3




| RANGE | $LD_1$ | $LD_3$ | $LD_4$ | $LD_5$ | $LD_6$ | $LD_7$ |
|---|---|---|---|---|---|---|
| 0·1V | X | 0 | 0 | 0 | 1 | X |
| 1V | X | 0 | 0 | 0 | 0 | X |
| 10V | X | 1 | 0 | 0 | 0 | X |
| 100V | X | 0 | 1 | 0 | 0 | X |
| 1000V | X | 0 | 0 | 1 | 0 | X |
| FILTER | X | X | X | X | X | 1 |

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NCES
CIMAL TO 2 PLACES ± ·1mm
CIMAL TO 1 PLACE ± ·2mm
OLE DIMENSIONS ± ·4mm
GULAR ± ½°
LESS OTHERWISE STATED
ANGLE PROJECTION

MATERIAL ——
FINISH ——

| | |
|---|---|
| ASSY DRG & PARTS LIST | 400552 |
| CIRCUIT DIAGRAM | |
| CHECK PROCEDURE | 460552 |
| CHECK LIST | 470552 |

TITLE
1061/62 AC RANGING
(OPTION 12)

DRAWING No.
430552

SHEET 4 OF 4

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